REPORT RESUMES

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SOURCES OF EDUCATIONAL CLIMATES IN HIGH SCHOOLS.

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VARIATIONS IN THE INFORMAL SOCIAL SYSTEMS OF 20 HIGH SCHOOLS, THE SOURCES OF THESE VARIATIONS, AND THE EFFECTS OF SUCH VARIATIONS ON THE ACADEMIC ATTITUDES AND BEHAVIOR OF STUDENTS WERE STUDIED. TWO RELATED ASPECTS OF THE SCHOOL SOCIAL ORGANIZATIONS RECEIVED MAJOR RESEARCH EMPHASIS--(1) THE CHARACTERISTIC GLOBAL DEMANDS, FEATURES, AND EMPHASES OF THE SCHOOL IN TERMS OF RELATIONSHIPS AMONG STUDENTS AND BETWEEN STUDENTS AND STAFF, AND (2) THE EXTENT TO WHICH ADOLESCENT PEER GROUPS EITHER REWARD ACADEMIC EXCELLENCE OR VALUE SOCIAL AND ANTISCHOOL ACTIVITIES. THE SAMPLE CONSISTED OF 20,345 STUDENTS, 1,029 TEACHERS, AND 20 PRINCIPALS. ALL THREE GROUPS COMPLETED SELF-ADMINISTERED QUESTIONNAIRES. IN ADDITION, STUDENTS WERE GIVEN TWO TESTS FROM PROJECT TALENT (FLANAGAN AND OTHERS, 1964) TO MEASURE APTITUDE FOR ABSTRACT REASONING AND ACHIEVEMENT IN MATHEMATICS. OTHER DATA WERE GATHERED FROM PERMANENT STUDENT RECORDS, INCLUDING IQ, GRADE POINT AVERAGE IN ENGLISH, AND ABSENTEEISM. OBTAINED FROM THE DATA GATHERING EXERCISE WERE MEASURES FOR THREE OTHER CLASSES OF VARIABLES--(1) VARIOUS DIMENSIONS OF SCHOOL CLIMATE AND ENVIRONMENT, (2) THE PERSONAL, ACADEMIC BEHAVIORAL, STUDENT ATTRIBUTES OF COLLEGE PREPARATION, PERSONAL VALUES ON INTELLECTUALISM AND ACHIEVEMENT, AND ACADEMIC ACHIEVEMENT IN MATHEMATICS AND ENGLISH, AND (3) SUCH PERSONAL AND BACKGROUND CHARACTERISTICS OF STUDENTS AS SEX, MENTAL APTITUDE, YEAR IN SCHOOL, AND SOCIOECONOMIC STATUS. THE LATTER CLASS OF VARIABLES WAS VIEWED AS A CLASS OF MEDIATING LINKS BETWEEN THE SCHOOL ENVIRONMENT AND THE INDIVIDUAL'S ACADEMIC BEHAVIOR. A SPECIAL STATISTICAL PROCEDURE WAS USED TO ESTABLISH A NUMBER OF RELATIONSHIPS AMONG THE CLASSES OF VARIABLES. A CONCOMITANT SEARCH WAS UNDERTAKEN TO IDENTIFY POTENTIAL SOURCES OF SCHOOL CLIMATE VARIATIONS, AND FINDINGS OF THIS EFFORT WERE (FOR THE MOST PART) NEGATIVE, BUT STILL SIGNIFICANT. A SECONDARY FOCUS OF THE OVERALL RESEARCH WAS AN EXPLORATORY ANALYSIS OF ACADEMIC DIFFERENCES BETWEEN NEGRO AND WHITE STUDENTS IN PREDOMINATELY WHITE HIGH SCHOOLS. (JH)

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Project No. 1999
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Edward L. McDill
Edmund D. Meyers, Jr.
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December 1966

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Chapter I

PROBLEM OF THE RESEARCH

Introduction

In 1932 Willard Waller published his classic study on the sociology of the school which was developed around the theme that the school is not only a formal organization but also a miniature informal society which exerts important influence on the behavior of its clients.[1]

As noted by Bidwell (1965) in an excellent review of Waller's work, Waller viewed the cohesive teachers' group as one of the most important components of the school society. He felt that teachers, as a result of their common professional backgrounds and perspectives, typically form a tightly-knit and distinctive subculture.

Waller posited a second and equally important component of the informal society of the school--the student peer group. This he saw as the product of compulsory mass education pulling into the school socially homogeneous cohorts of children from a neighborhood or community. Given the fact that students participate in school as a way of life with almost total personal involvement, he argued it is inevitable that the students also form a social system having several interrelated components: a distinctive subculture with identifiable norms and values; an age-graded status system involving a network of peer prestige based on certain personal attributes and performances; and a social structure or pattern of association involving two basic role types--leaders and followers.

He emphasized that there was a great divergence in the values and interests of students versus teachers, leading to conflict and hostility in the relations between school staffs and their adolescent clients. He argued that this conflict further solidified each group, with teachers continually attempting to maintain order and motivation through official authority and the student peer group uniting in response to these demands and attempting to avoid or deflect them.

As stressed by Bidwell (1965, p. 980), Waller viewed the consequence of this basic conflict as a tenuous control by teachers over the behavior of students, with the control being modified by the strength of the student social system.

Since Waller's work, a voluminous amount of material has been written on the adolescent peer group--a phenomenon which has been given a variety of names such as "adolescent society," "youth culture," "youth society," and "adolescent subculture"[2]--and its influences on the behavior of adolescents both in and outside of schools.

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[1] Four extensive syntheses of existing knowledge on the environmental factors of educational institutions which are related to the academic and social behavior of students have recently been developed by Bidwell (1965), Boocock (1966), Kirk (1965), and Lavin (1965). The authors are indebted to these sources for significant portions of the research cited in this report.

Although, there are different explanations regarding the source and persistence of a youth culture in American society, there tends to be agreement among social scientists on two related points. First, there exists in our society a youth culture which is distinctive from the adult society (Gottlieb and Ramsey, 1964, pp. 29-33, and Boocock, 1965, p. 27).[3]

Secondly, the peer group is a potent force in shaping the attitudes of individual students toward school, as well as their educational aspirations and achievement.

A position held by some scientists concerned with the study of youth in school settings is that adolescents actually comprise a semi-independent social system which has several interrelated components: a culture consisting of norms, values, and customs; a status system, which ranks its members according to certain performances and attributes; and a social structure or pattern of interaction which is instrumental in shaping the content of the culture.[4] This adolescent society is seen as the product of rapid technological change characteristic of modern industrialized society--change which has widened the gap between generations, making parental knowledge outdated and rendering the family incapable of adequately socializing the child (Coleman, 1961, p. 2). Thus modern industrial society has, by extending the period of training necessary for a child to take his place in the community, established the school as a primary socializing agency. The school is an institution which controls an ever increasing amount of the child's time and assumes more and more responsibility for developing conformity not only with the norms of scholastic achievement but with a much wider range of social behavior as well. However, in this connection, the larger adult society is faced with a problem: students often reject many of these norms--especially scholastic norms--or fail to achieve with respect to them. Coleman's explanation (1961) of the teen-ager's lack of interest in education or outright rejection of scholastic norms is that these adolescent societies focus interests on matters far removed from education. That is, these adolescent systems, with a meaningful set of sanctions to impose, often direct the flow of participants' energies into activities which conflict with educational goals.

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[2] As indicated by Boocock (1965, p. 27), these terms are used interchangeably by writers, and the phenomenon to which they refer has been considered by social scientists at several different levels of generality ranging from the small friendship cliques in schools to a distinct youth society at the national level with its own recognizable "state of life". Regarding the amount of published literature on youth, Jahoda and Warren (1965, p. 138) report "... the number of publications on adolescent behaviour recorded in the Psychological Abstracts has almost trebled since 1930 in absolute terms and, relative to the overall number of publications, more or less doubled."

[3] One must hasten to add, however, that there is some controversy on this point among researchers. This controversy will be discussed in some detail in the following chapter.

[4] The works of Gordon (1957) and Coleman (1961) represent the prototype of this position.

The Present Investigation

The primary intent of the research reported here is to determine the extent to which the educational and social environments or "climates" (as perceived by students and staffs) of twenty high schools vary, to assess the consequences of such variations on the academic behavior of individual students, and to isolate some of the sources of these variations. In investigating the variations in these climates, greatest emphasis is placed on two different but related aspects of the informal social organization of the schools. The first is the characteristic global demands, features or emphases of the school, both in terms of relationships among students and between students and staff. The second is the adolescent peer group in each school, dealing with the extent to which these groups reward academic excellence or value social and anti-school activities.

This research is a further development of The Adolescent Society (Coleman, 1961) and takes as its starting point the results reported by Coleman in that provocative work. A number of important ideas about the sources of variations in high school social systems and their effects upon the academic attitudes and behavior of students emerged from Coleman's research on ten midwestern high schools, but many of the ideas lack adequate substantiation, and important questions remain unanswered.[5] The most important of these are, of course, those which have direct implications for educational policy. As the school comes to play a larger and larger role, both in the adolescent's life and in the national economy, it is especially urgent for our society to have knowledge in this area.

The study has a second purpose, one which was not part of the original design--yet one which is of critical concern to social scientists involved in educational research and to practicing professional educators. This is the crucial problem of the academic behavior of Negroes relative to that of whites in desegregated school settings. Specifically, the objective of this phase of the larger study is to isolate specific factors in the school milieu which are linked with personal variables to influence the academic performance, educational aspirations, and intellectual orientations of Negro and white students in desegregated high schools. This phase of the project involves the use of all the small number of Negroes in the high schools under investigation and a sample of white students who are individually matched with the Negroes within school on a number of personal and social background variables. Given the dearth of unequivocal information about the academic behavior of Negro students in desegregated schools (Katz, 1964) and the fact that data are available by race in the twenty schools, an opportunity is provided to make some contribution in an area of current social concern.[6]

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[5] These questions will be discussed in the next chapter when Coleman's work is discussed in detail.

[6] The expansion of the original study to include this new topic came about in the summer of 1965 when the authors realized there was a sufficient number of Negro students in the schools to permit comparison with whites, if the two groups were matched on a number of relevant factors. Consequently, application was made to the Office of Education in June, 1965, for an extension of time and additional funds to proceed with the analysis and include the results as part of the present report. O.E. extended the deadline from January 31, 1966, until December 31, 1966, and made available additional funds for this addendum.

Chapter II

RELATED LITERATURE AND UNRESOLVED PROBLEMS

Introduction

This chapter presents a resumé of selected research relevant, either directly or indirectly, to the purposes of the present study. After reviewing the literature, two general questions will be posed dealing with problems which earlier research has left unsolved and toward which the present study is directed.

Before undertaking this critique of the literature, some comments seem appropriate concerning the general strategies of social scientists engaged in research in educational institutions. They have tended to direct a great deal of their attention toward one of two problems:

(1) ad hoc descriptive studies of the relations between participants in such institutions.

(2) correlational studies between individual level attributes of students or teachers in which the classroom merely provides a convenient setting to obtain data on large numbers of subjects with a minimum of effort and financial cost. This line of research activity has ignored a most promising research strategy--that of contextual analysis which consists of relating characteristics of the individual's social environment to a characteristic of the individual (Coleman, 1958). (The research presented in this report represents an attempt to systematically employ such a strategy.)

In short, despite the fact that a monumental amount of material has been written on many aspects of the school environment and the performance of students, there is a paucity of carefully documented and consolidated findings on the dimensions of the school environment which are related to what and how much students of varying social backgrounds learn.[1]

The literature presented below deals with research in two broad areas of school organization which have an effect on the academic behavior[2] of individual students from varying social and racial backgrounds--the social organization of the classroom and the school as a whole.[3]

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[1] This is a conclusion shared by Bidwell (1965) and Boocock (1966) in their comprehensive reviews of the literature.

[2] In this context "behavior" is used in a broad sense to include attitudes, perceptions, values, orientations, and aspirations, as well as overt performance.

[3] The reader may question this concern with research at the classroom level since the study is conducted at the school or global level. Furthermore, as noted by Boocock (1966, p. 18), the classroom and school levels could have inconsistent effects on the achievement of students. Such a proposition would

Review of the Literature

a. Classroom Effects on Academic Behavior of Students

Boocock (1966, p. 40) concludes that this is the area where carefully designed research producing consistent findings is most difficult to obtain. Nowhere is this more true than in studies of "teacher effectiveness." For example, Medley and Mitzel (1963), reviewing the research in this area conclude that there is almost a total lack of positive findings between numerous different measures of teacher effectiveness and student achievement. They suggest that such negative results are a consequence of inadequately designed research and failure to clearly specify what type of performance is to be investigated.

A few studies indicate that such factors as type of undergraduate training which teachers receive are relevant to high school students' test performances in science (Anderson, 1950). Two other studies (Cogan, 1958-59; and Heil, Powell, and Feifer, 1960) suggest that there are important teacher personality correlates of student productivity at both the elementary and junior high levels. It should be noted that these two investigations controlled for student personality variables, something which was seldom done in the research cited by Medley and Mitzel.

Cogan's work on junior high school students justifies some discussion since it is one of the more rigorous studies conducted in this area. He posited three different categories of teachers' behavior as affecting the amounts of required and student-initiated work. Using student ratings to classify teachers' behavior, he found a strong positive correlation between students' performance and inclusive behavior which he defined as nurturant and warm toward students. On the second factor characterizing teachers' interpersonal relationships with students, he uncovered only inconclusive evidence that teachers' preclusive behavior (dominative, aggressive, aloof, and impatient) was negatively related to the completed work of students. Finally, he found a positive relationship between an affectively neutral component of teachers' behavior which he termed conjunctive (ability to communicate with student, classroom management, and subject matter competence) and student productivity. Concerning inter-school differences, he found that the component of teachers' behavior labeled "inclusive" was the best predictor of student performance.

At the elementary school level, Bidwell (1965, p. 988) cites a study by Davidson and Long (1960-1961) showing that teacher warmth and understanding, as perceived by students, was positively related to students' self-esteem.

Ryans (1960 and 1961) conducted research at the elementary and high school levels isolating the dimensions of teacher behavior which are relevant for that

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not appear to be without merit. Nevertheless, the distinction between the two levels seems to be primarily one of level of abstraction. Stated differently, it seems tenable to assume that variation in classroom effects on student performance within schools is less than that between schools. For example, both staff and student "recruitment" policies of schools tend to result in fairly homogeneous teacher cadres and student bodies. Thus various dimensions of "classroom" effects on learning tend to pervade the environment of the school and hence become "school" effects.

of students. At the elementary level he found that teacher attributes such as originality and adaptability are related to high levels of classroom participation by students, and that such behavioral dimensions of teachers as systematic and well-planned classroom procedure are correlated with pupil behaviors of constructiveness, responsibility, cooperation, and personal control.

At the high school level, Ryans found no significant relationships between teacher characteristics and student behavior. On the other hand, Rosenfeld and Zander (1961) found, using a sample of high school students, two dimensions of teacher behavior--subject matter competence and teacher sanctions (both positive and negative)--to be positively correlated with student aspirations. Thus, Bidwell's conclusion that both the expressive and instrumental aspects of teachers' behavior have some effect on student accomplishment seems justified (1965, p. 988). The fact that such findings are more consistent at the elementary level than in high schools could be attributed to the importance of peer group influences in the second setting, which may determine classroom behavior more than do teacher expectations and behavior (Lavin, 1965, p. 143).

Another factor which could help explain the failure of "teacher effectiveness" to be more systematically related to classroom performance is the teacher "halo" or "credibility" effect which may neutralize any predicted differences. That is, teachers _per se_ start out with an advantage in that they are perceived by students, parents, and the larger community as being experts in their particular subject matter. Stated differently, the positive image of the communicator, which is somewhat institutionalized in our educational system, counteracts a significant part of the differences in teacher effectiveness.[4]

If there is lacking a comprehensive body of knowledge regarding the effects of the teacher's behavior on classroom learning in general, then it is a gross understatement to say that only a few systematic empirical studies have focussed on identifying the situational determinants of performance of Negroes or other minority groups in racially and/or ethnically mixed classrooms. In fact, Katz (1964) argues that so few studies have been conducted on this topic that most of the evidence is purely inferential.[5] He indicates that several factors have contributed to this situation:

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[4] On this point Boocock (1965, p. 8) suggests a very worthwhile research project: an investigation of the relation between the degree to which teachers are perceived by students as expert in certain areas and the quality of learning. Lavin (1965, p. 144) offers a similar explanation regarding student-teacher relationships. Although his review of the literature leads him to conclude there is some evidence to indicate that the degree of congruence in teacher-student values and attitudes is positively related to academic performance of students, he contends the relationship is basically independent of the content of the values and attitudes. Stated differently, such a generalization holds even when the teacher-student relationship involves what appear to be task-irrelevant criteria, which he explains in terms of a teacher halo effect.

[5] A notable exception in this general area is the bibliography which is rapidly building on the cognitive functioning and preschool development of "socially disadvantaged children." For a survey of the literature on these two topics see _IRCD_ Bulletin (January, 1965, and March, 1965). Even though the

(1) Desegregated school systems have a policy of racial nonclassification; consequently, separate data for Negroes and whites are not available.

(2) Where legal desegregation has occurred, it has been accompanied by strenuous efforts to raise educational standards in all schools; thus, the effects of desegregation *per se* are confounded with the effects of improved teaching and facilities.

(3) In several Southern states only small numbers of highly selected Negroes have been admitted to previously all-white schools. In these situations before-after comparisons of achievement are usually not available, making it impossible to assess the adjustment of white and Negro students and their relative performance.[6]

However, after systematically reviewing the available literature Katz concludes that most of the available evidence indicates that Negroes' academic adjustment in racially mixed schools is favorable. Specifically, Negroes attending desegregated schools in Washington (Hansen, 1960) and Louisville (Stallings, 1959) showed year to year gains on achievement tests. However, such increased performance may have been more attributable to a general improvement in educational standards than to racial mixing, since there appeared to have been only a minimal desegregation experience for the majority of Negro children in the two cities at the time the studies were conducted.

Lesser, *et al*., (1964) studied children of varying racial and ethnic backgrounds in New York City schools which were either racially balanced or imbalanced. He found that Negro children in racially balanced schools scored higher on a number of mental aptitude tests than those in imbalanced schools.

Weinberg cites a study by Katzenmeyer (1963) on the effects of desegregation on the intelligence test performance of both white and Negro students at the kindergarten and elementary levels. His study revealed that the I.Q. level of both groups increased during a two-year period, with the Negro children

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upsurge of interest in programs and practices formulated to compensate for the educational handicaps of socially disadvantaged children has been one of the significant developments in American education in the last few years, these programs have generated few empirical results regarding their effectiveness (IRCD Bulletin, March, 1965). Nevertheless, a number of studies are now being undertaken to isolate specific environmental factors of early childhood which account for the impaired cognitive functioning of socially disadvantaged children and the types of compensatory educational programs, such as early school admissions, which can overcome such cognitive retardation. (See, for example, An Early School Admissions Project Progress Report, Baltimore City Public Schools, 1964, Chap. 8.) Such programs are in their initial stages, and the evaluations of them are at best tentative.

[6] In addition to Katz's critique of the literature in this area, two other comprehensive reviews by Pettigrew (1964) and Weinberg (1965) are available.

showing a greater gain. He concluded that for desegregation to have beneficial effects for Negroes, it must be accompanied by a communality of experience with white students and adequate guidance by staff.

Pettigrew (1964, p. 128) contends that desegregation in a community gives academic encouragement to Negroes (whether in biracial or uniracial schools) and increases the morale of their teachers and parents. One of the crucial factors in this desegregation process appears to be the enhanced self-image Negroes acquire, which coupled with what Pettigrew (1964, p. 128) refers to as the "entrenched Negro desire for education," has positive academic consequences for Negroes. Several studies in recent years have presented evidence testifying to the extent to which Negroes view education as a means of achieving upward social mobility.

(1) A study in the Northeast in the middle 1950's (Rosen, 1959) revealed that a sample of Negro mothers placed great value on education as a means for their children to achieve upward mobility; 83 per cent of the respondents had college plans for their sons.

(2) A study in the early 1950's (Boyd, 1952), using Negro and white elementary students in a desegregated school who were matched on ability level, demonstrated that the Negroes expressed higher levels of aspiration and ambition than the whites.

(3) A recent national poll by Newsweek (1963) indicated that 97 per cent of Negro parents interviewed wanted their children to acquire at least a high school education.

(4) Reiss and Rhodes (1959), comparing the educational norms and goals of Negroes and whites from Nashville's predominantly segregated schools in 1957, found that Negro adolescents valued schooling more and had higher educational aspirations.

(5) Geisel (1962) found Negro students in segregated schools in Chattanooga had higher educational aspirations than whites.

(6) Blake (1960), comparing the behavior of Negroes and whites in a non-Southern integrated school, showed the educational aspirations of the former to be higher.

Thus, regardless of the section of the country and whether or not schools are racially mixed, Negro students are more educationally oriented than whites; and the interpretation that the higher levels of aspiration on the part of Negroes is an expression of their attempts to maintain self-esteem in the face of discrimination seems highly plausible (Weinberg, 1965, p. 8).

Katz (1964), commenting on the performance of Negroes in "deep South" states where desegregation has taken place, concludes that there is no evidence of widespread academic failure on their part. However, he cites evidence from two Southern communities (1964, p. 384) to the effect that significant numbers of Negro students in desegregated settings had failed to keep pace with their white classmates and that their failure seemed to be attributable to such factors as disadvantaged home backgrounds, lower academic standards in the segregated schools from which they transferred, and problems of social adjustment in the new desegregated environment.

After reviewing the available evidence, both Katz (1964, p. 384) and Weinberg (1965, p. 2 and p. 23) comment that there is no evidence to indicate that desegregation had damaged academic standards and had thus been detrimental to white students.

The above results, which indicate that desegregation has been accompanied by significant increases in Negro achievement, would appear to be a function of vastly improved educational opportunities and are consistent with the earlier findings of Klineberg (1935) in his classic study of the effects of school environment on the intelligence of Negro children. He demonstrated that Negro children born in New York City achieved higher scores on I.Q. tests than those who migrated from the South; and more importantly, the longer these migrant students resided in the North the greater the increase in their scores. Pettigrew (1964, p. 124) cites more recent research in Cleveland and Philadelphia to corroborate Klineberg's original findings.

The research of Katz and associates (1960, 1962, 1964, 1958, 1963, and in press) provides the most relevant findings and rationale for the extension of the present study to the problem of isolating situational determinants in desegregated high school environments of the academic behavior of Negroes and whites of comparable ability and socio-economic background. Thus a detailed summary of his work is in order here.

Based primarily on socio-psychological research on the behavioral effects of psychological stress and on his own series of experiments on the productivity of Negro college students in biracial settings, Katz (1964) posits several favorable and detrimental influences on Negro performance in educational settings at all levels. These factors should act as mediators or "explanatory links" between the environment of the school and the academic behavior of Negro students in integrated schools. Two of the most important of these influences are:

(1) Low probability of success vs. high probability of success--where Negro students acquire inferiority feelings outside of school as a result of their minority status or where they come from inferior segregated schools, they are likely to have a low expectancy of academic success; consequently, their achievement motivation should be low. On the other hand, if the Negro student is in an environment which objectively gives him a high probability of success,he should feel capable of meeting the academic standards of the integrated school and as a result have high achievement.

(2) Social threat vs. acceptance by white peers and teachers--given the prestige and power of the white majority, rejection of Negro students by white students and/or teachers should result in emotional responses such as low self-esteem and hostility that are adverse to intellectual functioning. On the other hand, acceptance by white peers and adults in school should have a social facilitation effect upon academic performance by motivating them to accept white standards of scholastic performance.

Katz (1964) cites evidence from a number of outside sources and from his own research which reveal the problems of adjustment Negro students experience in biracial settings involving complex learning. Some of the more important findings from his research are as follows:

(1) Experiments on Negro college males in a Northern university revealed that in work teams composed of Negroes and whites of equal ability, Negroes were more compliant, rated their performance as inferior even when it was not, and expressed less satisfaction with the team experience than did whites (1960 and 1958).

(2) In another study at a Northern university (1962) he found that experimentally inducing Negro subjects into attempts to influence non-hostile white partners in problem solving decreased their passivity and increased their ascendancy on another task with the same white partner. This was attributed to a reduction in their anxiety about evoking white hostility.

(3) Using Negro students at a predominantly Negro college in the South, he (1963) created a verbal-task situation in which he systematically varied the levels of social threat and failure threat. He found that the situation which was low in both types of threat resulted in better performance by Negroes in the presence of whites than in the presence of other Negroes. This finding suggested that the incentive value of success was greater in the white environment. However, when threat of electric shock was introduced into the experimental situation the white environment became less conducive to performance than the Negro one. Thus, the conclusion was reached that vulnerability to stress was greater in the white environment, even though it was not manifested until a strong explicit threat was introduced.

(4) In a follow-up on the preceding experiment (in press), he investigated in a Southern Negro college the effects of race of the task administrator, difficulty of task, and evaluative significance of the task, (i.e., whether it was described as a motor task or intellectual task) on Negro students' efficiency. It was discovered that the incentive value of success was higher with a white tester than with a Negro when the test was described as a motor task. However, when subjects were told the test measured intelligence rather than motor skill the probability of success was lower with a white tester.

(5) In a final experiment (1964) he and associates investigated the effects of anticipated intellectual comparison with white and Negro peers on the digit-symbol performance of Negro students from a Negro college in the South. The results revealed that anticipated intellectual comparison with Negro peers produced a higher level of verbal performance than anticipated comparison with white peers. These results were

> interpreted as further evidence that the subjective probability of success is lower when Negroes expect to be compared with whites.

Turning now to another aspect of the broad area of classroom effects on student performance, one finds a voluminous literature which has as its general orientation the idea that the classroom is a social microcosm or social system having certain characteristics of the larger society, the most prominent of which is a complex set of interpersonal relationships (Kirk, 1965, p. 12). This research has been subsumed under a number of rubrics: "student-to-student" relationships, classroom "structuring," and classroom "atmosphere" or "climate," and has been conducted at all levels of education.[7]

A larger segment of the literature on classroom "structuring" has dealt with the size of classes in relation to performance, and the available results fail to demonstrate that either large or small classes *per se* are superior (Boocock, 1966, p. 11). In his review of studies on this point, McKeachie (1962) concludes that large classes are not inferior if one uses achievement tests as the criterion. However, both students and teachers believe that teaching is more effective in small classes. Rather than size *per se* being an important factor, one would expect that class size in relation to teaching technique would be of considerable significance.

Newcomb, in referring to the commonly held assumption by both faculty and students in colleges that there is "some magic in 'student-faculty' contact" (1962, p. 485) as reflected in such factors as small student/faculty ratios and opportunity for frequent and personal contact with professors, argues that there is no research evidence to support the position that intellectual outcomes vary with the manipulation of such factors. It is his position that productivity is a function of such factors as ability, motivation, work habits, and prevailing norms of students and faculty.

Numerous studies of classroom structure have dealt with the social acceptability of the student, usually by mapping the sociometric structure of peer groups and then relating the student's popularity of social status to his academic performance. At the elementary level the findings suggest a positive relationship between social acceptability and academic performance (e.g., Buswell, 1953, Grann, *et al*., 1956, Quay, 1959, and Gronlund, 1959). Lavin (1965, p. 137) questions the validity of such a conclusion since the relationship tends to disappear when intelligence is controlled. Thus social acceptability may be a consequence rather than a determinant of performance at this level of education. This is an especially compelling argument if one accepts the premise that preadolescents are not sufficiently autonomous to develop achievement norms independent of teacher expectations. As a consequence their group-shared standards may be primarily reflections of teacher demands, and those students who exemplify these expectations are accorded prestige by their peers.

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[7] Throughout this chapter research at the elementary, secondary, and college levels is cited despite the fact that the present study is restricted to high school environments. This is done because the authors believe there are certain factors in the various environments which have consequences for the performance of students regardless of the age cohort to which they belong. For example, Coleman's research at the high school level (1961) and Wallace's work at the college level (1963 and 1964) show similar effects of the peer group on intellectual orientations.

Concerning the relationship between social acceptance by peers and scholastic ability, Tannenbaum (1962, pp. 9-12) reports on a number of studies which produced a positive correlation between the two factors. However, the relationship seems to break down for the most "highly gifted" students, suggesting that the talented students have problems of adjustment in relating to peers.

In both high schools and colleges, research on the relation between sociometric structure and achievement has been concentrated at the year-in-school level or institution level and will, therefore, be reviewed under the appropriate heading below.

Research on "climate," "atmosphere," and "morale" effects of the classroom on learning was an outgrowth of the pioneer studies of worker productivity in industrial settings by such men as Rothliesberger and Dickson (1939). Beginning with the studies by Lippit (1940) of the effects of different types of adult supervision on the content of interaction in experimentally created children's groups and continued at the college level by Deutsch (1949), these studies have failed to demonstrate a consistent relationship between morale or cohesion of such groups and productivity (Boocock, 1966, p. 16). Other research on the effects of group atmosphere in schools suggests that the climate has its effect through providing social rewards for certain activities, and not for others. In turn, those activities and values which are rewarded by the group are the ones for which there is strong competition, motivation, and achievement (Coleman, 1960). Such a formulation has some support in the educational research of sociologists and psychologists which indicates that individual students tend to adopt the scholastic norms of the majority group (Dittes and Kelley, 1956).

b. Institutional Level Effects on Student Performance

Research at this more abstract level starts from the premise that there are influences on performance which transcend particular classroom effects. The research effort in this area has been expended at both the high school and college levels.

Conant's examination of the American educational system precipitated a controversy with his advocacy of the large comprehensive high school (1959). Although Conant lacked empirical evidence to support his argument, he based his position on the premise that the large school can offer a more varied and rich educational program. However, as noted by Boocock (1966, p. 19), the most comprehensive and ambitious study of academic achievement ever conducted in American high schools--Project Talent (Flanagan, et al., 1962)--has failed to produce sizeable correlations between school size and academic performance as measured by numerous achievement tests, drop-out rates, or college enrollment. Ramsøy (1961, p. 124), in her secondary analysis of data gathered by Educational Testing Service from seniors in a representative sample of 500 U.S. public high schools, has shown that size of school has no appreciable effect upon the aspirations of the students.

Studies of the relationship between high school size and college performance also present conflicting results. Hoyt (1959) found a positive correlation between high school size and college grades when intelligence was controlled; however, Altman (1959) found no such association. Harmon (1962) has uncovered a significant positive correlation between high school size and the "Ph.D. productivity" rate of graduates. He attributes this relationship, in part, to the superior physical facilities and teaching personnel of larger high schools.

At the college level Davis (1963), employing a sample of students from 135 institutions, found an inverse relationship between college size and student commitment to "intellectualism." Such a finding supports the intuitive hunches of some educators that high student achievement and intellectual commitment of student bodies in certain small liberal arts colleges are partly attributable to low student-faculty ratios and opportunities for students to have frequent and personal contact with faculty.[8]

The pioneer longitudinal study of Bennington students conducted by Newcomb (1943) in the late 1930's provided the primary impetus for a host of studies on the environmental effects of institutions on a whole range of behavior of students in both institutions of higher learning[9] and high schools. He documented the extent to which students internalized the liberal, progressive, political, and economic values of the faculty and student body as they progressed through their college careers.

Newcomb's work was followed in the 1950's by an impressive array of college studies dealing with both single institutions and comparisons among various institutions. These studies have concentrated on the effect of institutional climates on academic achievement, aspirations, and values. One of the important foci of this research has been peer group influences on student behavior. The most protracted and intensive of these studies, conducted at Vassar, results in a number of scholarly publications (e.g., Sanford, 1956 and 1959; and Bushnell, 1962).

The research carefully demonstrated the ways in which the student culture both supported and counteracted faculty influences in the areas of academic and social behavior.

A recent study of a midwestern liberal arts college (Wallace, 1963 and 1964) reveals the powerful influences of peer groups on graduate school aspirations and value placed on academic achievement, with peer influences operating in opposite directions in these two areas to increase the former and depress the latter.

The study of the student culture of a medical school by Hughes and associates (1962) adds further documentation to the impact of peer groups on student performance and the functions of such groups in aiding the individual student to adjust to a highly competitive and threatening environment.

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[8] As noted earlier (see p. II-8 supra) Newcomb (1962, p. 485) strongly disputes such a contention and cites evidence from a study at Antioch to support the counter position. Such lack of consensus stresses the need for studies of the effects of college size on the type of "culture" which develops and, in turn, the effect of a given culture on different kinds of learning.

[9] For an excellent overview of the work in this area see Kirk (1965, Chapter I).

The scholarly works of Knapp and Goodrich (1952) and Knapp and Greenbaum (1953) paved the way for a large number of comparative studies of college environments and their effects on academic excellence. Knapp and his colleagues discovered that it was the small liberal arts college which had high student productivity as measured by Ph.D. rates of alumni and proportions of students seeking graduate training.

Pace and Stern (1958), Stern (1962), and Thistlethwaite (1959 and 1962) carried the above work further by attempting to measure the different environmental characteristics of colleges, the sources of variations in these characteristics, and the academic consequences of such variations for their student clientele. For example, Thistlethwaite (1959) has found that the College Characteristics Index Scales (C.C.I.) developed by Pace and Stern distinguish among colleges with respect to proportions of undergraduates seeking the Ph.D. in various academic areas. Astin (1961 and 1962) disputed the conclusion regarding the effect of different aspects of college environment on student achievement after purporting to demonstrate that within types of colleges such differences are not maintained when student "input" factors such as sex-ratio, ability level, and field of concentration are held constant. It would seem obvious that student input factors and institutional environments interact to produce variations in academic behavior of students. That is, outstanding institutions attract high calibre students, who in turn contribute to and reinforce those aspects of the campus environment which are conducive to intellectual commitment and high achievement.

One of the principal foci of research on factors in the high school environment which affect achievement is the peer group or adolescent subculture. Several of the studies have dealt only with segments of a school population, others with an entire school, and some with comparisons of the systemic effects in several schools.

Studies of the first-mentioned type, relying primarily on sociometric techniques, have produced variable findings with respect to the influence of peer group popularity and grade performance. For example, Edminston and Rhoades (1959) and Ryan and Davie (1958) found a small positive relationship between student popularity and grade performance, but there is some question whether the relationships are independent of ability level (Lavin, 1965, p. 137). A third study uncovered a curvilinear relationship between the two factors (Keisler, 1955).

Two of the more notable attempts to analyze the social system of single schools are Hollingshead's study (1949) in a small Illinois community in the 1940's and Gordon's investigation (1957) in the 1950's of a slightly larger school (600 students) located in a suburban Indiana community with a heterogeneous class structure.

Hollingshead's study concentrated on the relationship of a variety of student behaviors in the school setting to the class structure of the community, revealing the extent to which both the school staff and the student social structure reflected and reinforced that of the larger community. He stressed the extent to which educational aspirations, dating behavior, clique membership, and involvement in extra-curricular activities were a function of the student's family background. He also purported to show that teachers gave preferential treatment to students of "privileged" backgrounds, thus involving particularistic rather than universalistic criteria in their relations with adolescents.

Bidwell (1965, p. 980) argues that Gordon's study of "Wabash High" is the most comprehensive and detailed study of a school society yet completed. Gordon provides a wealth of insights with supporting data on teacher-student relationships, the adolescent subsystem of the school, and the consequences of participation in this system for the student. He found that the most important criterion for boys' status was participation in athletics, and for girls the criteria were clothes, "personality," and puritan morality. Among both sexes, intellectual commitment contributed very little to enhancing one's prestige. Prestige in the student structure to some extent did depend on conformity to the teacher's demands because of teacher authority with respect to dispensing grades. However, the student subculture rewarded achievement primarily because it was a requisite for participation in the extra-curriculum,not because of any intrinsic value placed on learning. Thus the overall effect of the adolescent social system was to focus the student's interests on matters removed from education--more specifically, from intellectual pursuits.

Wilson (1959), studying the peer group norms of boys in eight different West Coast high schools, has shown that the "value climate" of such groups affects academic achievement and aspirations, occupational choice, and even political preferences of individual students. These contextual effects were maintained when personal and social background factors were controlled. His findings regarding climate effects on educational aspirations have been corroborated by Michael (1961) and Ramsøy (1961).

Turner (1964), in an attempt to understand the social context in which ambition develops, studied the effects of family background, neighborhood, and the socio-economic context of the high school on educational and occupational ambition of high school seniors in Los Angeles. He found that the socio-economic context of the school was almost as important as family background in accounting for variation in ambition. Most recently, Boyle (1966), in attempting to account for some contradictions in earlier studies,has investigated the effects of the socio-economic context of the high school on the educational aspirations of female seniors in seventy high schools of western Canada. He discovered that the social composition of the student body has an important effect on individual aspirations, but the influence is stronger in large cities than in small communities. His results further indicate that a partial explanation for this difference is the greater success of metropolitan high schools in developing the aptitude of students; however, occupational or social class values have no explanatory power.

Tannenbaum's study (1962) of the values high school students place on intellectual ability and achievement relative to athletics yields some meaningful insights on the consequences of the peer group culture. Concentrating on eleventh grade students in a predominantly middle-class Jewish school in Brooklyn, he presented subjects with brief profiles of eight hypothetical students obtained by combining three sets of dichotomized attributes--athletic vs. nonathletic, studious vs. non-studious, and brilliant vs. average--and asked them to rate each of the eight on fifty-four desirable and undesirable character traits. The primary analysis involved a comparison of the average global scores on the fifty-four traits for each of the eight fictitious students, using a three-way analysis of variance design.

Some of Tannenbaum's more important findings are (p. 68) as follows:

(1) Athletic mindedness was rated much more desirable than its absence. The four hypothetical students who stressed athletics received higher mean scores than the non-athletes.

(2) Neither brilliance nor studiousness per se was devolved by the students since the stimulus characters stressing either or both of these characters who were sports-minded received high mean scores. However, when the hypothetical student possessed either or both of these attributes without being sports minded he received a low average social acceptability rating.

(3) Girls favored non-studiousness and athletic mindedness more than did boys.

(4) The image the students had of each of the eight characters was not influenced by the subjects' I.Q. or parents' socio-economic background.

The import of Tannenbaum's study is best summed up in his own words:

> "... these results suggest that academic brilliance in and of itself is not a stigma in the adolescent world. However, when it is combined with relatively unacceptable attributes, it can penalize its possessor severely. The non-studious athlete may demonstrate outstanding brainpower without fearing social derogation by peers; but a display of brilliance by one who is studious and indifferent to sports constitutes a definite status risk. The implied impression is that the brilliant student is an exceptionally prominent target for teen-age pressures to conform to certain behaviors and values. If so, there is danger of his deliberately masking his talent to relieve these pressures" (p. 68).

Coleman's research on ten midwestern high schools (1960 and 1961) has revealed the pervasive influence of adolescent social systems on student academic values and performance and on their social behavior. Since the present study represents a further development of his work, a detailed review of his more important findings is in order here.

In each of the ten schools, Coleman found that scholastic achievement was less valued by the student bodies than other activities. For boys, athletics was most highly valued, and for girls, a premium was placed on "being popular" and "being a leader in extra-curricular activities." Perhaps of even more significance is the finding that students of high sociometric status were less favorable toward being remembered as a brilliant student than the various student bodies as a whole. This was the case despite the fact that these "elites" came from higher socio-economic backgrounds and were likely to have college plans. A further comparison of the orientation of elites with that of non-elites revealed a number of important differences. Male elites were more likely to participate in athletics, to prefer to be a nationally famous athlete and be remembered in school as a star athlete, but were less likely to want to be remembered as a brilliant student. Girl elites were more likely to be participants in extra-curricular activities and less likely to choose the brilliant student image. In sum, the elites placed less positive value on scholastic success than did the non-elites.

The criteria for status in the adolescent social systems were determined for boys by comparing those chosen as "best athletes" by their peers with those chosen as "best students." For girls, the criteria involved comparing those chosen as "best students" with those selected as "being most popular with boys." The comparisons revealed that "athletes" were more likely to be elites than were "scholars"; similarly, "popular" girls were much more likely to have high status than were "scholars."

"Brilliance" was not highly valued in the most upper-middle-class suburban school (ranked 7th in the 10 schools). This was true despite the fact that a greater proportion of the parents of these students had attended college than in any other school and despite the fact that a higher percentage of the students were planning to attend college. Furthermore, the elites in this school placed less value on being remembered as a brilliant student than did the elites or student bodies of the other nine schools.

One of the most significant contributions of Coleman's work is the demonstration of how the content of peer norms affects both academic performance and values regarding intellectual activities: Those schools in which grades were an important criterion for social status were the ones in which students of high ability were most motivated to academic achievement.[10] That is, students of better than average intellect were motivated to achieve when they received social rewards from their peers. Otherwise, their talents and energies were invested in non-scholastic activities. Thus, Coleman's findings suggest that adolescent social systems channel the energy of teen-agers in certain directions and divert it from others. In many schools these systems apply a set of rewards and punishments which give support for athletics and extra-curricular activities and discourage intellectual activities.

Coleman's work has attracted a great deal of attention, both favorable and unfavorable. A basic point in his research involves a proposition which has created considerable controversy among social scientists devoted to the study of adolescent behavior. This is the notion of the existence of a youth culture. Prior to Coleman's work, a limited number of researchers strongly disputed the existence of such a phenomenon, arguing that the idea was nothing more than a myth (Elkin and Westley, 1955). Using data collected in a Canadian suburban community, Elkin's and Westley's study revealed a minimum of parent-adolescent conflict and a continuity of socialization reflected in close and warm relationships between parents and children. A number of reviewers have questioned their conclusions (e.g., Jahoda and Warren, 1965, Boocock, 1966) since the data were obtained from only a very small sample of subjects in an atypical upper-middle-class suburb of Montreal, Canada.

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[10] In this connection Lavin (1965, p. 217) comments that the inconsistency in findings in the literature regarding the influence of the peer group on student performance might be attributed to the failure of many studies to investigate status in the peer group in terms of the particular value systems defining norms.

Coleman's thesis in the Adolescent Society is a direct contradiction to that of Elkin and Estley; he argued, based on his findings, that adolescents constitute a small separate society, with its participants having most of their interactions within the peer group and maintaining only tenuous connections with the adult world which are conflict-laden.

Coleman's claims have been disputed on the grounds that he tends to base much of his argument on statements of assumption or appeals for agreement and that he fails to take into account evidence which he himself presents which contradicts such an argument (Jahoda and Warren, 1965, p. 142). They cite Coleman's position as merely one example of a tendency among many social scientists to presuppose the existence of a youth culture while lacking conceptual clarity about the term, which in turn has led researchers to select data to support their biases. They see the entire controversy as a pseudo-problem which is a consequence of researchers' error of reifying the term "adolescent sub-culture." Their plea is for researchers to view the term as nothing more than a concept which can lead to fruitful research if it does not exclude other conceptual guides. Thus, their argument goes, adolescents should be considered as an age group which can be usefully studied from the point of view of what they have in common, as well as from the point of view of what they share with the larger society.

Epperson (1964) has also questioned Coleman's claim by presenting contradictory evidence based on data he gathered from students in a large comprehensive high school in a medium-sized city using items from Coleman's original questionnaire. Epperson also gathered data on pre-adolescents in the same community to test the hypothesis that if adolescents have a distinct subculture, there should be a decided difference between elementary and high school students in the extent to which they are concerned over the disapproval of their parents. His results indicate that adolescents are more concerned about parental disapproval of their behavior. Epperson concludes that the notion of a distinct adolescent social system needs to be qualified to take account of the student's attachment to his family and the nature of the decision-making situation (p. 96). He presents an argument similar to Jahoda's and Warren's, namely, the need for a conceptual scheme which takes into account the multiple loyalties of the adolescent and the relation of these loyalties to specific situations.

Gottlieb and Reeves (1963), attempting to clarify the notion of the adolescent culture, conducted a poll of approximately twenty experts on adolescent behavior to elicit their views on the existence of an adolescent culture and the criteria they would employ in evaluating the validity of the concept.[11] The experts were asked to give their views in relation to the polar positions of Coleman and Elkin-Westley. Gottlieb and Reeves report that these researchers generally support the notion but there is some hedging and disagreement as to how it functions, the most appropriate approaches to studying it, just how important its influences are on individuals relative to the other institutions of society, and how is it different from other age groupings. For Gottlieb and Reeves, the critical problem is how involvement in and commitment to the peer group influence the behavior and belief systems of the adolescent.

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[11] The results of this poll are summarized in Gottlieb and Ramsey (1964, pp. 29-33).

In the present research the writers will accept the caveat of Jahoda and Warren and attempt to follow the prescription of Muzafer Sherif (as reported in Jahoda and Warren, 1965, and Gottlieb and Ramsey, 1964) which seems consistent with that of Epperson discussed above. Sherif's position is that the researcher should approach the study of adolescents (1) in terms of specific social situations (2) concentrate on the distinctiveness of the status and norm systems of the peer groups to which he belongs and (3) determine how these peer groups' norms and values are linked to those of the adult society.

McDill and Coleman (1963 and 1965), employing a longitudinal design, have substantiated Coleman's earlier findings regarding the influence of adolescent peer groups on academic behavior. Utilizing a freshman-to-senior year panel analysis in six of Coleman's original ten schools, they were able to assess the interdependent effects of achievement orientation and status in school upon plans to attend college (1963). One of their major conclusions is that high status students gain an interest in attending college because of the social activities it entails and not through an interest in academic achievement.

In the second study (1965) they documented the increasing effect of peer group influences on educational aspirations from the beginning to the end of the high school career and how such socializing effects can counteract those of family background. This latter study also revealed the differential impact of family and peer group influences in school contexts where the intellectual climates varied.

Unresolved Problems Toward Which Present Study is Directed

Two important questions which are unanswered in the literature discussed above are the foci of the present investigation.

First, is the question of the effects of global factors in the school environment on the academic behavior of students. The review of the literature in this chapter certainly leads to the plausible conclusion that the environment of the high school is a powerful force in shaping the academic aspirations, orientations, and achievement level of individual students. However, the review also clearly indicates that most of the research on the effects of specific aspects of educational climates has been conducted at the tertiary or college level with investigation in high schools somewhat neglected (Herr, 1965, p. 679). Boocock (1966, p. 41) summarizes most succinctly the state of knowledge in this area and what is lacking:

> "On the level of the whole school and its surrounding community, the research evidence indicates that certain types of environments--namely those in which intellectualism and academic achievement are positively valued--are productive of learning. The trick here is to understand just what combinations of individual and system characteristics produce various intellectual climates, and there are still

> some basic problems of measurement to be resolved. It is also clear that the characteristics, interests, and experiences children bring with them to school affect their behavior there, and thus if one looks only at the school itself, one cannot fully understand learning differences among children."

The research presented in this report represents an attempt to help fill this gap by concentrating on three interrelated problems:

(1) Systematically measuring a number of dimensions of educational and social climates of high schools.

(2) Demonstrating the academic consequences of these climate dimensions for individual students exposed to them, by holding constant relevant personal and background factors of the students. Such an approach involves separating what is known as "structural" effects from individual effects (Blau, 1960). Measures of three different categories of academic behavior will be investigated in the analysis--educational plans, intellectual orientations, and academic achievement.

(3) Investigating the sources of variations in these school climates by introducing into the analysis factors from both the larger community and the formal organization of the school.

As noted in the preceding chapter, this primary focus of the research takes as its point of departure the results reported in The Adolescent Society, (Coleman, 1961) differing, however, in several ways. First, it is concerned with both more comprehensive and more specific aspects of the school environment than those employed by Coleman. As noted by Bidwell (1965, p. 992), researchers have concentrated too much on the student society, ignoring the teacher colleague group and the degree of social integration of the two components in the school society. Such a criticism applies to Coleman's original work which focused primarily on the student social system of the school. As pointed out in the preceding chapter, in investigating variations in dimensions of climates across schools, specific global characteristics (both academic and social) of the relationships among students and between students and staff are included in the present study. In addition, the extent to which the student social system rewards academic performance and intellectualism, as opposed to extra-curricular or even anti-school activities, and the extent to which these shared norms and values are integrated with those of the faculty are considered.

Secondly, in the present study schools have been sampled more strategically than in the previous research, both to overcome the regional bias and to include schools with more variation in their climates and their level of academic performance. In order to meet these criteria schools have been selected which vary in terms of several social contexts--geographical region, size of school, social class composition of school and community, type of community (e.g., suburban "bedroom," college town, and large city), and ethnic composition of schools.

Thirdly, in an exploratory yet fairly exhaustive manner, the authors attempt to investigate more completely the sources of variations in educational and social climates of schools than did Coleman. The factors considered here as possible sources of school atmosphere fall under two broad headings:[12]

(1) community characteristics--a) availability of cultural resources such as libraries, museums, art galleries, and community theatre b) socio-economic resources of community and their investment in the school such as average per-pupil expenditure, average salaries of teachers, socio-economic context of the geographical area served by the school and socio-economic context of the student body c) degree of parental and community interest and involvement in the academic quality of the school.

(2) organizational properties of the school--facilities and curricular characteristics such as average size of classes, educational level of faculty, policies on acceleration, provisions for advanced placement in college, and homogeneous grouping of students by ability.

There is clearly a lack of understanding of the sources of variations in educational environments, and this lacuna is a most important problem since from the perspective of social action,educators have to understand the sources in order to modify their effects.

Hopefully, the results emanating from the investigation of the three interrelated problems just discussed can provide some useful information to educators searching for answers to a critical question of policy: How can the formal and informal organization of schools be manipulated to encourage academic and intellectual commitment on the part of students?

The secondary focus of the present study involves a problem which the above review of literature reveals has been ignored almost totally by social scientists. This is the problem of measuring the relative effects of specific dimensions of the school environment on the academic behavior of Negro and white students in integrated settings. Thus, the objective here is to conduct an analysis to determine if the educational and social climates of these high schools are related to individual factors which can account for variations in the educational plans, intellectual orientations, and academic achievement of Negro and white students. This phase of the project is designed to permit comparisons between and within races, using respondents who are individually matched within schools on a number of relevant personal and family background variables.

In the twelve years since the Supreme Court made its decision on school segregation there has been growing public recognition that both *de jure* and *de facto* segregation have deleterious educational consequences for Negro students. However, there is lacking systematic empirical evidence on the specific ways in which the complexity of factors in the integrated school environment influence the academic behavior of Negro students relative to whites of comparable background and ability. The extension of the larger project into this area should make some contribution toward understanding how the high school can motivate students of both races to fulfill their academic promise and thus reduce the loss of talent which is widespread in American schools.

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[12] Many of the community and school properties listed have been suggested or assumed by researchers and educators as having an effect on the academic "output" of a school. For a summary of the literature in this area the reader is referred to Boocock (1965, pp. 37-40).

Although this extension is related to the objectives of the larger study (e.g., both the climate measures and the dependent variables are the same) it is a separate research problem. This coupled with the fact that it is important to keep the complex analysis of data as simple as possible, dictates that the two problems be presented separately in the chapters which follow. Consequently, the original issue of determining the effects of the school environment on the academic behavior of individual students in all twenty high schools will be presented first. This will be followed by a presentation and interpretation of results relating to the extension of the project into the area of situational determinants of the relative performance of Negro and white students of comparable background and ability.

PART I. THE PARENT RESEARCH

Chapter III

METHODOLOGY OF THE STUDY

Selection of the Sample of Schools

The original design for selecting schools and that actually employed in the study differ considerably. The design called for a total of twenty schools to be investigated. The substantive problem as first conceived was to examine the educational and social environments of public coeducational high schools with high levels of achievement, relative to their input (factors such as I.Q. and socioeconomic background), compared with those in which students achieve less than would be expected from their input. A very difficult problem was faced in this connection: There are only a limited number of sources of data on the achievement level of high schools on a national scale, to say nothing of the problems of data on scholastic aptitude and socio-economic composition of student bodies. However, one excellent source of both input and output of high schools appeared to be in Project Talent, the largest and most comprehensive inventory of the intellectual resources and achievement of American youth ever undertaken. These data are from the administration of a two-day battery of tests and questionnaires to 440,000 students in a representative sample of 1,353 secondary schools. However, when the authors contacted the staff of Project Talent in the fall of 1963 about input and output measures for their schools which would permit the selection of twenty high schools according to the criteria outlined above, the Washington Office of Project Talent refused to make available any data on their sample of schools on the grounds that it would violate the guarantee of confidentiality given to each school participating in their survey.

Both National Merit Scholarship Corporation and Educational Testing Service were then approached to see if either had input and output measures on large numbers of high schools. Although both organizations were very receptive, neither had the required data available.

With the potential sources of precise input and output measures for a large number of high schools exhausted, the substantive focus of the research shifted to that described in Chapters I and II, namely, to assess the influence of the educational and social climates of schools on the academic behavior of individual students while controlling relevant personal and family background variables. Stated differently, the objectives were to measure school contextual effects on students' intellectual orientations, aspirations, and performance and then attempt to explain some of the sources of such contextual variation. These objectives required that an effort be made to select schools which varied according to both the independent and dependent variables, that is, school climate and academic performance. Thus a much less precise sampling design than the original was employed, one which required the selection of schools in several stages. The first stage involved choosing a large number of schools which varied by geographical region and academic performance from which the final sample of twenty schools could be selected.

Data for constructing one rough indicator of the output or academic performance of high schools at the national level were found in the Office of Scientific Personnel of the National Academy of Sciences-National Research Council. For a number of years this agency has maintained records of all third-level research degrees granted by U.S. universities. Since 1957 these data have been obtained by a questionnaire completed by the recipient of the degree and forwarded to the Office of Scientific Personnel by the degree-granting institution (Harmon, 1962, p. 72). One item of information the questionnaire contains is the name and address of the high school from which the recipient was graduated. Dr. Lindsey Harmon, Director of Research at N.A.C. has been carrying out intensive research for some time on the factors which influence the career decisions of students seeking research degrees. Dr. Harmon was contacted, and he kindly consented to provide a list of the high school backgrounds of all Ph.D. and Ed.D. recipients for the period of 1957-62. This list, obtained in December, 1963, made it possible to compute a "Ph.D. productivity rate" for all U.S. high schools which was used as one crude indicator of the academic output of high schools. The following formula was used to compute the Ph.D.[1] productivity rate for all U.S. high schools, using third-level research degree recipients for the above-mentioned seven-year period.

$$\text{Ph.D. Productivity Index for a High School}[2] = \frac{\text{Total No. of Ph.D. and Ed.D. recipients for 1957-62}}{\text{Effective Size of Graduating Class for 1951}}$$

where effective size of graduating class for 1951 =

$$.9 \times \frac{\text{Total No. of Boys Enrolled in the School in 1951}}{\text{Total No. of Students Enrolled in the School in 1951}} \times \text{Total No. of Graduates in 1951}$$

$$+$$

$$.1 \times \frac{\text{Total No. of Girls Enrolled in School in 1951}}{\text{Total No. of Students Enrolled in the School in 1951}} \times \text{Total No. of Graduates in 1951}$$

In the above formula the adjustment in the actual size of graduating class to an "effective size of graduating class" is necessary because the likelihood of a male high school graduate's receiving a Ph.D. or Ed.D. is roughly nine times as great as that for a female.[3] Thus, the term "effective size of graduating class," used as the denominator in the term to compute the Ph.D. productivity rate of a high school, standardizes the sex-ratio of the schools.

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[1] The reader should keep in mind that all third-level research degrees, that is both Ph.D. and Ed.D.'s, are included in the computation of output for schools. However, in the interests of brevity the term "Ph.D. productivity rates" will be used in the discussion which follows.

[2] The writers are indebted to James S. Coleman for suggesting this formula. This ratio is quite similar to the well known measure of Ph.D. productivity of undergraduate institutions by Knapp and associates (Knapp and Goodrich, 1952, and Knapp and Greenbaum, 1953)--the ratio of alumni who receive the doctorate to the total number of Baccalaureate recipients from the undergraduate institution.

The number of graduates and enrollment figures by sex for high schools in 1951[4] was used as the base because these figures come closest to representing the estimated average date of graduation from high school for Ph.D. or Ed.D. recipients during the period 1957-62. As noted by Harmon (Harmon, 1962, p. 76), for all doctorate holders the average length of time between graduation from high school and receipt of the highest degree is fourteen years. Thus, it would have been more appropriate to use enrollment data on high schools for the year 1945 (the estimated average date of graduation from high school for doctorate recipients in 1959, the median year for the period 1957-62). However, enrollment figures by sex and number of graduates were not available for U.S. high schools for this date, necessitating the use of published data for 1951.

Obviously, the Ph.D. productivity rate of a high school as defined above is lacking in numerous respects as a measure of the school's achievement level or output. An immediate criticism of the measure which comes to mind is that one's high school experiences have little effect on whether one receives an advanced degree some fourteen years later. This is the "proof by juxtaposition" fallacy of comparing two sets of data widely separated in time to explain each other without considering the multitude of factors which intervene to affect the decision to seek the advanced degree, for example, the type and quality of undergraduate institution the student attends after graduation from high school. The most appropriate response to such a criticism can be obtained from Harmon's extensive research (1962) dealing with the effect of high school experiences on career decisions. He shows how the choice of eventual specialization at the doctorate level is to a considerable extent dependent on high school experiences such as courses available, courses taken, and grades achieved in high school,as well as indirect indicators in the school environment of the collective attitude toward intellectual attainment. Harmon's conclusion from his research offers the best defense against such a criticism: "The present study suffices, however, to demonstrate conclusively that there are definitely identifiable factors in a person's high school experiences which are related to the choice of a professional career many years later" (p. 81).

A highly justified criticism of relying primarily on the Ph.D. productivity rate of a high school as an indicator of its achievement level is that the quality of the institution could change drastically between the time doctorate recipients were high school students and the time they received the advanced degree. Anyone familiar with the high rate of geographical mobility of the American population is aware of the "flight to suburbia" of its more affluent segments and the deleterious effects such migration has had on the school systems of many large urban centers. Such was the case with certain high schools which had high Ph.D.

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[3] Personal communication with Lindsey Harmon.

[4] These data were obtained from the Directory of Secondary Day Schools 1951-52, U.S. Department of Health, Education, and Welfare, U.S. Government Printing Office, 1954.

productivity, making it necessary to have informants who were familiar with the schools which were considered for inclusion in the sample.[5]

Another cogent criticism of relying on the Ph.D. rate of schools as an indicator of their achievement levels is that the measure includes only one type of intellectual attainment and ignores a host of achievement in other areas, such as medicine, law, the performing arts, and the business world. Although the authors lack any evidence to support their argument, it is their belief that institutions which have high Ph.D. rates also have disproportionate numbers of graduates who achieve eminence in other professional, technical, and kindred areas as well as in the managerial and executive areas.

The three criticisms just cited are sufficient to indicate the tenuity of relying on the Ph.D. rate of high schools as the only device for drawing the sample of schools for study. Thus, the Ph.D. rates of schools were used as a screening device in the first stage of selecting the sample of twenty public high schools.[6] The Ph.D. rate of schools was checked against another crude, yet up-to-date, output measure of schools--the total number of semi-finalists the schools had in the National Merit Scholarship Qualifying Test for the four year period 1960-64. Just as the Ph.D. rates of high schools are inadequate as a measure of the student achievement, so are the number of National Merit semifinalists.[7] Nevertheless, using the Ph.D. rate of high schools in conjunction with the number of National Merit Semifinalists provided a more up to date and reliable criterion for initially selecting schools than using either of them alone.

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[5] One of the twenty schools included in the final sample, a former intellectually elite high school with a large number of doctorates among its graduates, is an example of a high school which had not maintained its academic excellence. Conversations with an educator who was familiar with the quality of the school alerted the investigators to the change in the school. Thus, despite the fact that the school had a high Ph.D. productivity rate it was included in the sample as a school which was expected not to have a climate highly conducive to intellectualism and achievement.

[6] In fact, five of the twenty schools selected in the final sample were opened after 1955, meaning that they had no Ph.D. rates. This fact underscores the authors' point that Ph.D. rates were merely an aid in the early stages of choosing a sample.

[7] The National Merit Scholarship Corporation in its annual publication, Semifinalists in the Merit Program, which gives the names of all semifinalists by high school, strongly emphasizes that the effectiveness or academic quality of a school cannot be judged by the number of semifinalists it has. In the present context the number of semifinalists for a school is not a dependable measure of output for a variety of reasons,some of which are: certain high schools permit only a select few of their juniors to take the exam, while others as a matter of policy give the test to the entire junior class; the number of semifinalists in each state is set by a quota based on the high school population of the state; and all selections are made on an individual state basis.

After selecting a number of schools for possible inclusion which varied by both output and geographical region, the second step in selecting the sample of twenty was to choose schools according to diversity of educational and social climates. Obviously there was no published source of data on school climates; consequently, it was necessary to choose schools varying on factors which would hopefully relate to variations in climate. The characteristics chosen were (1) size of community (2) socio-economic composition of community (or area serving the school in those cases where the community had more than one high school) (3) ethnic composition of school (4) type of community (e.g., old suburban, new suburban, college town, single high school town, medium-sized city, and large city) and (5) size of school. Data on these school and community characteristics were obtained from census data and the Directory of Public Secondary Day Schools 1958-59, U.S. Department of Health, Education and Welfare, Office of Education, 1961, for all schools initially screened by the Ph.D. productivity and National Merit Semifinalists criteria. Thirteen schools having high levels of output (as defined by Ph.D. rates and number of National Merit Semifinalists), which were located in several different geographical regions and which varied according to the five demographic and social characteristics just mentioned, were selected in January, 1964, in hopes of obtaining cooperation from ten of the schools. The plan was to pair with each of the high achieving schools a second school in physical proximity (i.e., within fifty miles in the same state) which was similar in terms of the above five demographic and social characteristics but having lower academic output. It was necessary to have each pair of schools in physical proximity in order to minimize the costs of data collection. It was also important that the schools be somewhat comparable on the given demographic and social characteristics--especially socio-economic composition of area served by the school--in order to crudely control input measures. Otherwise, any differences in achievement level of students could be almost totally a function of students' socio-economic backgrounds.[8] Using volumes from the 1960 census and the Directory of Secondary Day Schools, 1958-59, a minimum of two alternate schools, which had lower levels of achievement, were chosen for each of the thirteen high achieving schools. The intent of this lengthy procedure was to obtain ten pairs of schools which would comprise the sample.[9]

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[8] As tabular evidence to be presented below will show, the two schools in each pair are not precisely matched on demographic and social factors. However, it was important that the schools have some semblance of comparability on these characteristics in order to investigate the effects of educational environment on the behavior of students. For example, it would be ludicrous to attempt a comparison of the effects of school climate of a predominantly Jewish high school with those of a *de facto* segregated Negro high school on the academic performance of individual students.

[9] Data on the doctorate productivity of all U.S. high schools were received from Dr. Lindsey Harmon on December 9, 1963. From that time until early February, 1964, the first two authors, with the aid of an I.B.M. 7094 computer, devoted almost full time to selecting a tentative sample of schools to contact. Whether the two months required to select the sample is an indication of the difficulty of the problem or a tribute to the incompetence of the researchers is left to the judgment of the reader. Regardless, the problems of selecting a sample of schools which were encountered in this study certainly point up the need for up-to-date comprehensive and rich statistics on educational institutions

The third stage of selecting the sample was then begun. This was to obtain information about both the achievement level and educational climates of schools from persons who had firsthand knowledge of the institution. For certain schools these informants were alumni,and for others they were officials from the systems in which the schools were located or officials from nearby systems who had considerable knowledge of the institutions.[10] On the basis of information from these persons the sample of tentative schools was revised. For example, as noted in footnote 5 above, one of the schools which was initially chosen as having high academic output was discovered to no longer be of such high academic quality, and it was paired with a recently opened school from the same system which was portrayed as being an academically elite institution.

As a result of a chance conversation with a Johns Hopkins undergraduate, a pair of schools was chosen neither of which had a high level of achievement. The student was an alumnus of one of the two schools--a new school which had been in operation only six years. His alma mater had a student merit program--a program which gives the members a great deal of autonomy and responsibility,[11] and the authors were interested in including this school to try to measure the impact of the student merit program on the school climate.[12] The school which was paired with it was in a nearby town, and the community which had the new school with the merit program had sent its students to the paired school until overcrowding required the opening of the new school in 1958. The two schools were quite similar

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at the national level. To cite one example of the many problems faced as a lack of reliable statistics on schools: One of the schools selected had, in 1959, four grades and 1,276 students. When the school was contacted it was discovered that it had an enrollment of 2,442 and only three grades. Fortunately, some steps are now being taken to provide reliable statistics on U.S. schools. For example, the Research and Development Center for the Study of Individual and Cultural Differences in Education at Harvard University, in cooperation with the New England Education Data Systems, is now in the process of establishing an educational data bank on pupils in the New England region. Hopefully, such agencies will flourish in the near future to provide a national census in education. Such a fund of data would be an invaluable tool to researchers attempting to conduct systematic research in education.

[10] The authors were fortunate in locating a number of these alumni among Johns Hopkins undergraduates and graduate students.

[11] For example, students selected for the program are given considerable latitude in how to spend their school day, making adjustments in their class schedule according to interest. The program was not the same as that in many high schools which extend to honor students and/or seniors special privileges. Students are selected for membership in the program not on the basis of scholarship but on the basis of maturity and responsibility. A complex procedure is used by a student-faculty committee to screen all prospective members.

[12] This special problem has not been investigated as of this date. Including it in the plan of analysis at the time the sample was selected reflects an over-optimism on the part of the investigators. Nevertheless, the inclusion of the two schools is justified since they added to the heterogeneity of the sample in terms of socio-economic and ethnic composition of students, achievement level of schools, and school climates.

with respect to demographic and social characteristics. The selection of these two schools for inclusion and their immediate agreement to participate in the study reduced the number of schools required to eighteen.

On the basis of information obtained from alumni and various school officials familiar with the thirteen academically elite schools, four of them were removed from consideration. This left only nine high-producing schools for possible inclusion, which meant that all of them and their paired schools would have to accept if data on twenty schools were to be obtained in the spring of 1964--the date set for completion of data collection. The nine high-achieving schools were immediately contacted by letter followed by phone, and eight of them quickly consented to participate in the study. Unfortunately, the one which refused to cooperate waited approximately six weeks before reaching a decision, making it impossible to select a substitute and fit it into the tight schedule of data collection for the spring of 1964. As quickly as each of the remaining eight schools with high output consented to being studied, the school with which it was paired was contacted. Fortunately, all eight of these lower achieving schools were highly cooperative and immediately consented to participate. However, in early April one of the eight elite schools reneged on its earlier agreement only two weeks prior to the date set for collecting data. Thus, data were obtained on seventeen schools in the spring of 1964, three less than the number required.

One year later, in the spring of 1965, the three additional schools were selected and studied, completing the sample of twenty public, comprehensive schools. One of these three schools was chosen as a replacement for the high-achieving school which had cancelled the previous year. It is an academically superior regional school opened in 1956 which serves two contigious communities. The other two schools, in the South Atlantic region, were chosen as a pair. Both schools are new schools, in the same school system which is located in a metropolitan area of approximately 335,000 people. The school which was chosen as the high achieving school is a public experimental high school opened in 1963.[13] At the time data were collected the school had freshmen, sophomores, and juniors. Its first class was graduated in August, 1966.

The institution has a number of unusual features which distinguish it from more traditional schools:

(1) A trimester system of 220 days annually.

(2) A continuous progress curriculum where students advance at their own rate.

(3) A class schedule of four periods of seventy minutes' duration for each subject with team teaching used in many courses.

(4) A curriculum which includes advanced math and science courses and five different foreign languages.

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[13] James S. Coleman suggested the inclusion of this school in the sample. Professor Coleman was familiar with the academic program of the school as a result of his role as consultant on the establishment of academic games as an integral part of the school's curriculum.

Obviously, such a school is devoted primarily to college preparatory objectives. All students are required to take English, mathematics, science, a foreign language, and a technical science each year. However, the school is comprehensive (that is not strictly college preparatory) in two senses. First, the curriculum is highly flexible in that students are not promoted to a new grade each year. Instead, the student progresses through a series of achievement levels in each subject area, and the speed of his advancement depends upon ability and motivation.[14] Secondly, the school has a considerable number of elective courses which are not college preparatory, such as typing, home economics, mechanical drawing, machine shop, and art.

The school which was paired with the experimental school was also opened in the fall of 1963; however, it had only 9th and 10th graders enrolled at the time the data were gathered in contrast with 9th, 10th, and 11th graders in the experimental school. It is comparable to the experimental school in one respect--it draws its student body primarily from the middle-class residential area of the community where a sizable proportion of the students from the experimental school reside.

To summarize the selection of the twenty schools: they were chosen in three stages using criteria which are not highly precise, yet criteria which hopefully would yield schools varying in terms of academic performance, educational climates, demographic and social characteristics, and region of the country. Table III-1 presents data on the five demographic and social characteristics of the schools which were used in an attempt to obtain variation in school climates, along with a number of other background characteristics about the schools. These data clearly indicate that the schools cover a variety of geographical, social, and demographic contexts:

(1) They are located in seven different geographical regions and eight different states.

(2) The schools range in size from 462 students to 2,442 students, and the communities in which they are located vary in population from 4,000 to almost 3,000,000.

(3) The socio-economic composition of the areas which the schools serve are quite heterogeneous with average family income varying from approximately $4,900 to almost $13,000 and median education level exhibiting a range of almost 4½ years (9.5 to 13.9).

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[14] Although the school has a selective admissions policy in that students are accepted by application and are admitted only if they demonstrate responsibility and maturity, they are not strictly a college prep group since they consist of a cross section of the county population. Further evidence on this point is given by the fact that twenty-five percent of them answered in the questionnaire that they did not plan to enroll in college as a full-time student immediately after completing high school. One other school in the sample, a comprehensive institution in the more strict sense of the word, had a higher proportion of its student body planning to become full-time college students immediately after finishing high school.

TABLE III-1

BACKGROUND CHARACTERISTICS OF TWENTY PUBLIC COMPREHENSIVE SCHOOLS PARTICIPATING IN STUDY IN 1964 AND 1965

School Identification[m]	Location of School by Region of Country[k]	High School Enrollment	Number of Grades in High School	1960 Community Population[a]	1960 Median Education for Persons 25 Years and Older in Community[a]	1960 Median Income for Families in Community[a]	Ethnic Composition of School[g]				Type of Community[l]	Annual Starting Salary in School for Teacher with Bachelor's Degree[f]	Average Annual Per Pupil Expenditure for School[f]
							Protestant	Catholic	Jewish	All Other			
01	NE	479	10-12	10,000	13.3	$ 6,278	59.5	31.0	1.9	7.6	CT	$ 4,500	$ 670
02	MA	864	10-12	6,000	12.3	7,146	71.2	25.7	1.1	2.0	IT	4,500	750
03	ENC	1,054	10-12	17,000	12.5	7,818	63.5	34.1	0.1	2.5	S	4,800	750
04	NE	1,016	10-12	187,000	10.6	5,804	16.7	44.4	31.8	7.5	MSC	4,500	471
05	ESC	1,493	10-12	26,000	10.8	5,837	93.9	4.4	0.9	0.8	SC	4,300	380
06[h]	PAC	2,291	10-12	2,968,000	11.9[b]	6,628[b]	**	**	**	**	LC	5,300	566
07	MA	1,166	9-12	24,000	9.5	6,437	15.4	82.6	0.6	1.6	SC	5,000	550
08	WNC	2,442	10-12	60,000[c]	12.1[d]	7,741[d]	70.0	26.7	0.2	3.0	NMCS	4,800	451
09	MA	462	10-12	8,400	9.8	6,302	51.1	46.9	0.2	1.9	IT	4,500	415
10	NE	546	9-12	5,400	12.3	6,599	56.4	37.3	2.9	3.3	CT	5,200	860
11[h]	PAC	1,968	10-12	2,968,000	13.9[b]	12,872[b]	**	**	**	**	NUMCBS	5,300	485
12	MA	605	9-12	4,000	11.6	6,089	57.7	38.8	1.4	2.0	SRT	4,800	750
13	MA	1,020	9-12	14,000	10.9	7,401	29.1	63.4	4.2	3.3	SC	4,800	490
14	NE	677	10-12	13,000	12.6	7,967	26.1	37.5	34.1	2.2	S	4,800	625
15	ENC	1,322	10-12	38,000	11.4	6,844	58.7	34.6	2.7	4.1	S	4,800	Unknown
16	ESC	984	9-12	18,000	10.1	4,885	94.4	4.0	0.8	0.7	SC	4,400	365
17	WNC	1,715	10-12	29,000	12.6	8,750	79.0	17.6	0.4	3.0	OUMCBS	4,600	598
18[j]	SA	866	9-11	334,000[e]	12.2	5,343	66.1	20.0	11.0	3.2	MSC	5,400	403
19[j]	SA	480	9-10	334,000[e]	12.2	5,343	71.0	26.9	1.4	0.7	MSC	4,700	403
20	MA	917	9-12	12,000[c]	12.5[d]	9,148[d]	61.4	31.8	3.8	2.9	UMCSBS	5,200	1,015

TABLE III-1 (continued)

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[a] Source: U.S. Census.

[b] Computed from Census Tract Data for area served by school.

[c] Number represents combined population for two urban places served by school.

[d] Number represents weighted average for two urban places served by school.

[e] Number represents the population of the standard metropolitan statistical area served by the school system in which school is located.

[f] Source: Principal Questionnaires.

[g] Source: Student Questionnaires.

[h] These two schools are in the same system.

[j] These two schools are in the same system.

[k] Region of country is abbreviated as follows: NE for New England, MA for Middle Atlantic, ENC for East North Central, ESC for East South Central, PAC for Pacific, WNC for West North Central, and SA for South Atlantic.

[l] Type of community is abbreviated as follows: CT for College Town, IT for Industrial Town, S for Suburb, MSC for Medium-Size City, SC for Small City, LC for Large City, NMCS for New-Middle-Class Suburb, NUMCBS for New-Upper-Middle-Class-Bedroom Suburb (unincorporated), SRT for Seaside Resort Town, OUMCBS for Old-Upper-Middle-Class-Bedroom Suburb, and UMCSBS for Upper-Middle-Class-Seaside-Bedroom Suburb.

[m] The schools are presented anonymously by number.

[**] School system regulations prohibited asking questions about students' religious affiliation.

(4) The schools show a tremendous amount of religious-ethnic heterogeneity with the percentages of Protestants ranging from approximately 17% to 94%, the percentages of Catholics varying from 4% to 83%, and the percentages of Jews going from 0.1% to slightly more than 34%.

(5) A number of different types of communities are represented in the sample. There are five towns in the sample. In two of these (01 and 10), institutions of higher learning dominate the economic life of the community. There are two industrial towns (02 and 09) located in the county which ranks seventh in the U.S. as an industrial center. Finally among the towns is the Middle Atlantic seaside resort (12) in which fishing, both commercial and sport, is the largest industry.

There are seven suburban communities (ranging from lower-middle-class to upper-middle) all of which are satellites of large urban centers of more than 750,000 population. Two of these suburbs (15 and 03) have both small industry and business; four of them (14, 11, 17, and 20) are predominantly upper-middle-class, "bedroom" (i.e., residential) communities varying in age from ten years to one hundred; and one of them (08), representing two urban places which combined to form a single school district, is a new middle-class, "space-age" suburb whose population more than doubled in five years.

There are seven cities varying in size from 14,000 to one of the five largest in the nation. These seven cities cover a broad spectrum with respect to functional specialization. One of these (04), the third largest city in New England, is an important commercial and industrial center with considerable diversity of manufacturing. The other city in this category, in which both schools 18 and 19 are located, has a combination of commercial and light industrial business and is one of the major seaside resorts in the U.S.

Two of the four small cities in the sample (05 and 16) are small rail and industrial centers in the same timber, farm, coal, and iron region. The other two are contiguous (13 and 07) manufacturing cities within commuting distance of New York City.

Finally, school 06 is located in one of the major retail-trade, educational, and entertainment centers of the U.S.

(6) The schools show considerable variation with respect to capital investment in education as measured by beginning teachers' salaries and average annual per-pupil expenditure. With respect to the first factor, they vary $1,000 per year--from $4,400 to $5,400. In terms of average per-pupil expenditure, the schools show even greater variation--they cover the gamut from $365 to $1,015 per year.[15]

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[15] The reader might conclude that variation on these two factors is not highly relevant to the objectives of the study since the zero-order, product-moment correlation between them and median school performance on a mathematics

It should be emphasized at this juncture that these schools are not a representative sample of any geographical area, nor are they representative of any universe of schools with respect to social, economic, or achievement criteria. Instead, they were deliberately chosen in an attempt to have variation in educational environments and academic behavior. Nevertheless, the authors feel safe in concluding that they exhibit a great deal of the variety found in U.S. public high schools with respect to socio-economic, demographic, and community characteristics.[16] Obviously, no attempt will be made to generalize the findings to American high schools or American high school students. Generalizations are made only to students[17] having personal and background characteristics of the type found among the 20,000 in this study and located in schools having the environmental characteristics of the twenty selected for study.

Before closing this discussion of the sample selection, some data should be presented on the relative rank of the two schools in each of the ten pairs with regard to educational climate and achievement level. Such data will provide a crude test of the adequacy of the criteria used in steps two and three in selecting the sample. The data are found in Table III-2 which presents the schools in pairs, their rank in ascending order (from 1 to 20 on a measure of school climate which is labelled "academic emulation,"[18] and their rank in ascending order (from 1 to 20) on median scores on the mathematics achievement test administered to the student bodies of all twenty schools (see footnote 15 supra.). The school listed

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achievement test from the Project Talent battery is .08 and -.06, respectively. (These findings will be discussed in a later chapter.) However, since previous research has resulted in contradictory findings on the relationship between amount of community financial support and academic performance of schools, (cited in Boocock, 1966, p. 38) the authors felt this was a factor to consider when schools were selected. It is noteworthy that Coleman (1961, p. 265) did not find a relationship between average per-pupil expenditure and school achievement relative to ability level and peer group rewards for achievement. He mentions results from an unpublished, state-wide study of Connecticut schools in 1956 to support his findings.

[16] There is one outstanding exception here--racial composition. The schools are predominantly white, with five of them having no Negro students as far as can be determined, and only one (15) having as much as six percent of its student body Negro.

[17] The reader is again reminded that the unit of analysis in this study is not schools but students. The concern is with the influence of the school on the behavior of individual students varying in terms of personal and family background characteristics.

[18] This is a comprehensive measure of the academic and intellectual climate of the school based on a complex procedure to be discussed later in this chapter. Briefly, the schools are ranked from lowest to highest on factor scores on the first factor obtained from a factor analysis of 39 measures of the school climate. These 39 variables were derived by aggregating both teacher and student perceptions of numerous aspects of the academic and social environment of the school. This first factor extracted from the factor analysis accounts for 22.3% of the total variance of the 39 variables.

TABLE III-2

RANK ORDER OF THE TEN PAIRS OF SCHOOLS ON EDUCATIONAL CLIMATE AND ACHIEVEMENT LEVEL

School Identification Number	Rank Order on Educational Climate[a]	Rank Order on Achievement Level[b]
01	16	11
10	19	16
02	14	14
09	09	04
15	10	05
03	03	08
04	20	17
14	11	20
05	13	15
16	07	10
11	15	18
06	08	06
13	01	02
07	02	01
17	12	13
08	06	09
20	18	19
12	05	07
18	17	12
19	04	03

[a] Schools are ranked in ascending order on a measure of school climate labelled "academic emulation." This measure is the school's factor score computed from the first factor extracted from a factor analysis (principal component solution and orthogonal rotation) of 39 variables. The 39 variables are aggregated teacher and student perceptions of a number of different aspects of the educational climate of the school.

[b] The schools are ranked in ascending order according to median performance of their student bodies on a mathematics achievement test originally used in Project Talent.

first in each pair was predicted to have (1) a climate more oriented toward intellectualism and achievement and (2) a higher achievement level.

With respect to the relative position of the two schools in each pair on the measure of climate, the predicted order was obtained for eight of the ten pairs (.01 > p using the Wilcoxin Matched-Pairs Signed-Rank Test). The predictions did not hold for the two pairs containing schools 01-10 and 13-07, respectively. In the latter pair school 07 was only one rank higher than school 13.

The predicted order of schools on the mathematics achievement test was less accurate than for school climate, with the prediction holding for seven of the ten pairs (.05 > p using the Wilcoxin Test). The predicted order reversed in pairs 01-10, 15-03, and 04-14.

Overall, the criteria used in steps two and three of the sample design to select paired schools, with one member of each pair having a climate less conducive to intellectualism and having a lower level of achievement than the other member, yielded reliable results. In the analysis of the effects of school climate on academic behavior of students,comparisons will not be made within pairs of schools. As noted earlier in this chapter, pairs of schools were selected solely to obtain a sample which varied according to educational environment and academic productivity.

Sources of Data

Data analyzed in this report come from five sources:

(a) self-administered questionnaires to the student bodies of the schools.

(b) self-administered questionnaires to the faculty of each school.

(c) self-administered questionnaires to the principal of each school.

(d) two academic tests from Project Talent--one measuring aptitude for abstract reasoning and the other measuring achievement in mathematics--administered to the students of each school.

(e) information from the permanent records of students.

Copies of the instruments listed in a-d above are presented in Appendix A. Each of the five sources of data will be briefly described below.

a. Student Questionnaire

This instrument, consisting of both precoded and open-ended questions, was designed to treat subjects as both respondents and informants. As respondents they were asked to give information about their social backgrounds; intellectual attitudes and values; educational and occupational aspirations; academic and interpersonal behavior in the school situation; and academic and interpersonal behavior in relation to family and peers outside of school. In the role of informants they were asked to provide sociometric information on the informal peer group structure of the school--who were members of the leading crowd; who was the best athlete (best dressed for girls); best student; most popular with opposite sex; and who were their ego-ideals as students. They were also asked to provide information as observers of the functioning of the social system of students--what types of activities and values were rewarded in their own peer group and in the entire student society;[19] and both the formal and informal behavior of teachers in the school setting. Finally, a list of fifty-four true-false items about students and teachers was presented to the students. These items are primarily adaptations of those in the College Characteristics Index developed by Stern (1958) and revised by Thistlethwaite (1963) and the High School Characteristics Index formulated by Stern (1961). These items are designed to tap informants' perceptions of a number of diverse conceptual areas of the school environment; for example, faculty "presses"[20] toward scientism, intellectualism, humanism, vocationalism, enthusiasm, and supportiveness, and student counterparts of these presses.

b. Teacher Questionnaire

This instrument is quite similar to that administered to students. In filling out the questionnaire the teacher, just like the student, was playing the role of both respondent and informant. In addition to the usual social background information about the subject, information was obtained not only about his own personal intellectual values and norms, but these values as they project into his relation to students.[21] There were also items to elicit teachers' career aspirations for the students in their schools. As informants, teachers were not asked to provide sociometric data on the social structure of students. However, they were asked a number of questions about the dominant values, norms, and behavior patterns of the student society and those of their faculty colleagues.[22] Finally, with only minor changes, teachers were presented with the same battery of faculty and student press, true-false items as was given in the student questionnaire.

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[19] Many of the items used to obtain data up to this point were either modifications or replications of items used by Coleman in his original questionnaire for The Adolescent Society (1961).

[20] In this context the term "press" refers to the characteristic demands or pressures of the school environment as perceived by the aggregate of informants who are participants in the system.

[21] An example of this type of item is number 11 in the teacher questionnaire (see Appendix A).

[22] Many of these items were adopted from the teacher questionnaire used by Coleman in The Adolescent Society.

c. Principal Questionnaire

This instrument, a modified version of the School Questionnaire[23] used in Project Talent, was included in the survey to obtain data on a number of objective social, historical, and academic characteristics of the school. Other than limited background data on the principal, the instrument did not deal with personal information about any member of the school community.

d. Two Academic Tests Used in Project Talent

These two devices, used with the permission of the Project Talent staff, were developed by them for their 1960 survey of the aptitudes and abilities of American high school youth.[24]

The Abstract Reasoning Test (AR), a fifteen item multiple-choice test, was designed to measure a particular type of reasoning ability--the ability to determine inductively the logical relationships among the elements of patterns of diagrams. The testing experts who developed it felt it is more "culturally free" than a device directly involving verbal ability and that scores on this type of instrument should be viewed as one dimension in the broad domain of intellectual potential.

The Mathematics Test (MATH), a twenty-four item standard multiple-choice exam, measures achievement through the ninth-grade level (other than arithmetic computation and arithmetic reasoning). The items were developed such that if considerable time had elapsed since the student had been exposed to the material, he should have been able to recall it rapidly, if he really mastered it in the first place.

e. Information from Student Permanent Records

Data from student permanent records, including I.Q. scores, academic rank in class (for seniors only), English grades, and absences were transcribed at the end of the school year for all students in each school by its clerical staff.

A word of explanation should be given about the choice of English grades as a second measure of academic performance. This decision was made for two reasons. First, a majority of the twenty schools did not have cumulative grade point averages for their students other than seniors. Secondly, even if such data were available, comparing students within a school (to say nothing of across schools) who are enrolled in college preparatory programs with those in a business or general curriculum would involve a logically tenuous decision. The one subject which all the schools required their entire student bodies to take each year was English. Although in each school there was some homogeneous grouping of students in English courses, this was the one subject which came closest to providing a common baseline for comparing academic performance. However, as will be shown in the next chapter, English grades are an inadequate measure of achievement across schools.

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[23] Project Talent, Monograph No. 2, Cooperative Research Program, U.S. Office of Education, Project No. 226, Appendix A.

[24] The descriptions of the two tests are based on those found in Dailey and Shaycoft (1961, pp. 40-42 and 45-46).

Collection of Data

All of the above data were collected in the spring and summer of either 1964 or 1965. For seventeen of the schools these tasks were completed in the summer of 1964, and for the remaining three (schools 18, 19, and 20), in the summer of 1965. The data for these latter three schools could not be obtained until 1965 because of scheduling problems and the cancellation by one school of its agreement to be included in the survey, necessitating the selection of a replacement school.

For the first seventeen schools, data were collected between March 19, 1964, and May 22, 1964, from 18,239 students in schools located in seven states stretching from northern New England to the Pacific Ocean. Data were gathered from 2,106 students in the three remaining schools in April, 1965. Student questionnaires were administered by the project staff in English classes (without teachers being present) in fifteen schools. In two other schools the students completed the questionnaires in large groups (without teachers present) in the school cafeteria or auditorium. These administrations were conducted under the control of the project director with other staff members acting as monitors. In two of the three remaining institutions the administration was conducted in classes with the teacher present, and all instructions were conveyed over the public address system by the project director. In one school this procedure was used with the project director controlling the administration via closed-circuit television.[25] Overall, these various procedures resulted in a high degree of cooperation from students. Only a small percentage of students gave facetious responses to items, and only 18 students or 0.1% of the total students taking the questionnaires refused to place their real names on them.[26]

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[25] As is evident from this description, every effort was made to prevent teachers from becoming involved in the administration. There were two reasons for this. First, teachers filled out questionnaires similar in many respects to those of the students, and the researchers were concerned about the effects such involvement might have on the reliability of data from teachers. Secondly, it was felt that the presence of teachers might affect the reliability of students' responses. Consequently, in the three schools where teachers assisted in the administration the only task they performed was to distribute and collect questionnaires. In these schools every attempt was made to protect the confidentiality of student responses by having the questionnaires distributed in sealed envelopes. There is no evidence to indicate that this type of administration adversely affected the reliability of data from students in these three schools.

[26] This high degree of cooperation on the part of students would, in considerable part, appear to be attributable to two factors. First, the students were

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In every school, teacher questionnaires were distributed by the secretarial staff after the project staff had left the school, and they were returned by the teachers directly by mail. The overall response rate among teachers was very high, as will be shown below.

Principal questionnaires were distributed and returned by mail early in the summer following the collection of data from students. The principals of all twenty schools were highly conscientious in completing the lengthy inventory.

The two academic tests, Abstract Reasoning and Mathematics, were administered in classroom situations in each school under the supervision of the guidance department shortly after the project staff had left. Administrators' guides, giving detailed and concise instructions for administering the tests, were provided by the project to standardize the testing procedure across schools. Students completed the tests on I.B.M. mark-sensing cards which were machine scored by the project staff.

Since the overwhelming majority of data presented in this report comes from student questionnaires and academic tests, and from teacher questionnaires, it is important to present information on the response rates for each of these instruments in each school. Information is presented by school for student questionnaires and the two academic tests in Table III-3. For all schools combined, slightly more than 85 percent of the total of 22,367 students took both the academic tests and questionnaires, with the percent varying across schools from 73[27] to 93.2. Ninety-two percent of the students in all schools combined were administered the academic tests, with individual schools varying from 84.7[28] to 98.1. For student questionnaires the overall response rate was 90.9, with individual schools showing considerable variation from a low of 80.6 to a high of almost 95 percent.

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reminded a number of times during the administration that their confidentiality would be completely protected. Secondly, just as was the case in Coleman's original work (Coleman, 1961), many of the items were dealing with the subjects as adolescents in the role of an informant about the behavior and values of peers and teachers--topics which were highly salient for them. There is one school which is an exception to the cooperation of students. This is school 06 in which the questionnaires were administered over a two-day period to physical education classes in the school cafeteria. Several of the students created disturbances during the administration, and generally there was a less cooperative attitude among the students in this institution than in any other. Also the fact that the administration of questionnaires required two days in this large school resulted in a large number of students being informed of the survey by other students and subsequently failing to report to complete the questionnaire during the second day.

[27] This is the school where the project staff had most difficulty in obtaining the cooperation of students when questionnaires were administered (see footnote 26 above). It is also a school which has a high rate of transfers in and out of the school each year--in excess of thirty percent--and an average daily absenteeism rate of ten percent.

[28] This school, number 03, is the only one where the response rate is significantly lower than that for all schools combined. The authors were never

TABLE III-3

RESPONSE RATES BY SCHOOLS FOR STUDENT QUESTIONNAIRES, ACHIEVEMENT TESTS, AND BOTH QUESTIONNAIRES AND TESTS

School Identification Number	School Enrollment	Percent of Students Taking Both T's and Q's	Percent of Students Taking T's Only	Percent of Students Taking Q's Only	Percent of Students Taking Neither T's nor Q's	Percent of Students Taking T's	Percent of Students Taking Q's
01	479	83.5	7.5	5.8	3.2	91.0	89.3
02	864	93.1	4.5	1.7	0.7	97.6	94.8
03	1,054	78.7	6.0	14.8	0.5	84.7	93.5
04	1,016	87.7	5.3	6.3	0.7	93.0	94.0
05	1,493	88.8	6.8	3.1	0.3	95.6	91.9
06	2,291	73.0	16.1	7.6	3.3	89.1	80.6
07	1,166	82.6	8.1	6.9	2.4	90.7	89.5
08	2,442	82.8	4.3	4.3	8.6	87.1	87.1
09	462	88.5	5.4	4.8	1.3	93.9	93.3
10	546	93.2	4.9	1.5	0.4	98.1	94.7
11	1,968	89.5	4.1	5.2	1.2	93.6	94.7
12	605	88.9	3.8	5.6	1.7	92.7	94.5
13	1,020	90.4	7.1	2.0	0.5	97.5	92.4
14	677	84.9	5.9	7.7	1.5	90.8	92.6
15	1,322	86.4	7.3	5.1	1.2	93.7	91.5
16	984	88.3	6.6	3.7	1.4	94.9	92.0
17	1,715	88.0	6.2	4.7	1.1	94.2	92.7
18	866	87.0	4.9	6.9	1.2	91.9	93.9
19	480	84.2	6.7	6.3	2.8	90.9	90.5
20	917	85.8	5.0	8.0	1.2	90.8	93.8
Total for All Schools	(22,367)	(85.3)	(6.8)	(5.6)	(2.3)	(92.1)	(90.9)

Thus, in the total sample, not administering the tests concurrently with the questionnaires reduced by 5.6 percent (see last row of column 5 in Table III-3) the number of students for whom both sets of data were not available. However, scheduling problems in the schools simply did not make it feasible to use two class periods in the same school day for collecting data. Consequently, there was no alternative but to postpone administering the two tests to dates convenient for each school, and under the supervision of the guidance departments.

Because much of the analysis involves using student questionnaire data together with academic test performance, the question must be raised as to what extent this loss of 14.7 percent of students biases the sample in those instances where both sets of data are employed in the analysis. Since this 14.7 percent of the cases includes students for whom only questionnaire data are missing, others for whom academic tests data are not available, and a third category for whom neither type of data is available, any comparisons between these students and the other 85.3 percent of the school populations is restricted to a limited number of factors which are available from student permanent records. These factors are sex, year in school, absenteeism, and English grades. As will be documented later in the report, both in earlier research and in this study the first three factors are related to academic performance, and English grade-point average is one of the measures of academic performance used in the analysis. Thus, to assess response bias, the two categories--those from whom questionnaire and academic tests data were obtained and those for whom both sets of data are not available--are compared in Tables III-4-7 with respect to sex, year in school, absenteeism, and grade performance in English.

Sex Bias. When each school is considered separately and when all schools are combined, girls are slightly less likely to respond than boys (see Table III-4). However, for all schools combined the percentage difference is far from significant, and even within schools the differences in either direction are significant in only four schools. Finally, there is no systematic pattern across schools as measured by the sign test. Thus, it is clear that there is no sex bias in the response rates on questionnaires and tests.

Bias Related to Year in School. Table III-5 indicates that there is a tendency for non-respondents to be upperclassmen. In seventeen of the twenty schools this is the case. However, within schools the difference is statistically significant in only seven of the twenty. Although the difference is statistically significant for all schools combined, the absolute percentage difference is not large (63.0%-57.5%). Consequently, it is concluded that there is only a slight bias related to grade in school.

Bias Associated with Absenteeism. Table III-6 reveals a strong and systematic bias associated with students' school attendance. This is axiomatic; that is, students who were not present for the administration of both types of instruments would be expected to have higher absence rates over the entire school year.

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able to determine what accounted for this poor response. It should be noted that the response rate for student questionnaires in this school (93.5%) is higher than that for all schools combined (90.9%) and for the mean rate across schools (91.8%).

TABLE III-4

RESPONSE BIAS ASSOCIATED WITH SEX

School Identification Number	Number of Respondents[a]	Number of Non-Respondents[b]	% of Respondents Who Are Girls	% of Non-Respondents Who Are Girls	P is less Than[c]	Sign Test[d]
01	400	78	49.8	53.8	.90	+
02	802	62	49.1	54.8	.50	+
03	830	223	47.8	46.2	.95	-
04	891	125	48.8	48.8	--	0
05	1,324	169	46.0	49.7	.95	+
06	1,674	616	50.1	42.9	.01	-
07	965	197	50.1	58.1	.05	+
08	2,022	420	50.1	51.9	.50	+
09	408	54	49.8	53.7	.90	+
10	509	37	50.3	54.1	.95	+
11	1,770	193	48.7	59.1	.01	+
12	538	67	47.2	44.8	.95	-
13	922	95	49.7	36.8	.02	-
14	574	103	48.8	53.4	.50	+
15	1,140	180	52.5	47.8	.30	-
16	867	116	49.9	48.3	.95	-
17	1,510	204	48.1	52.0	.30	+
18	753	113	40.0	44.2	.50	+
19	403	76	45.4	51.3	.50	+
20	787	117	51.1	54.7	.50	+
All Schools Combined	(19,089)	(3,245)	(49.0)	(49.5)	(.90)	

[a] Respondents are students who were administered questionnaires and tests.

[b] Non-Respondents are students for whom data are missing on either questionnaires or tests, or both.

[c] Probability levels are based on the Chi-square test.

[d] H_1 was that non-respondents are more likely to be girls than are respondents. P of H_o = .084 (where H_o is null hypothesis) for one-tailed test.

TABLE III-5

RESPONSE BIAS ASSOCIATED WITH YEAR IN SCHOOL

School Identification Number	Number of Respondents[a]	Number of Non-Respondents[b]	% of Respondents Who Are 11th or 12th Graders	% of Non-Respondents Who Are 11th or 12th Graders	P is Less Than[c]	Sign Test[d]
01	397	75	61.2	76.0	.02	+
02	800	62	63.5	72.6	.20	+
03	830	220	62.7	60.9	.70	-
04	891	124	63.6	73.4	.05	+
05	1,323	169	57.9	62.7	.30	+
06	1,673	594	67.9	66.2	.50	-
07	962	192	43.3	57.3	.001	+
08	2,001	396	63.1	63.9	.98	+
09	407	52	65.8	78.8	.10	+
10	507	37	46.0	54.1	.50	+
11	1,767	193	63.8	72.5	.02	+
12	515	60	73.8	76.7	.70	+
13	922	94	44.9	54.3	.10	+
14	568	101	63.9	68.3	.50	+
15	1,138	177	64.2	70.1	.20	+
16	865	115	45.7	41.7	.50	-
17	1,506	198	64.9	67.7	.50	+
18	753	110	33.6	46.4	.01	+
19[e]	401	73	60.1	64.4	.50	+
20	781	115	47.5	67.0	.001	+
All Schools Combined	(19,007)	(3,157)	(57.5)	(63.0)	(.001)	

[a] Respondents are students who were administered questionnaires and tests.

[b] Non-Respondents are students for whom data are missing on either questionnaires or tests, or both.

[c] Probability levels are based on the Chi-square test.

[d] H_1 was that non-respondents are more likely to be upper-classmen (i.e., 11th and 12ths graders) than are respondents. P of H_o (where H_o is null hypothesis) = .001.

[e] School 19 has only 9th and 10th graders. Percentages are based on the number of 10th graders.

TABLE III-6

RESPONSE BIAS ASSOCIATED WITH ABSENTEEISM

School Identification Number	Number of Respondents[a]	Number of Non-Respondents[b]	% Respondents Who Have High Absenteeism Rates	% of Non-Respondents Who Have High Absenteeism Rates	P is Less Than[c]	Sign Test[d]
01	397	74	29.0	64.9	.001	+
02	800	61	30.8	62.3	.001	+
03	809	213	27.2	45.1	.001	+
04	847	118	37.5	65.3	.001	+
05	1,322	165	23.8	58.2	.001	+
06	1,669	591	41.3	56.9	.001	+
07	950	182	61.5	86.3	.001	+
08	2,004	416	39.1	63.9	.001	+
09	407	51	29.5	70.6	.001	+
10	507	36	29.6	55.6	.01	+
11	1,757	189	36.3	67.2	.001	+
12	504	56	34.1	73.1	.001	+
13	908	85	52.0	65.9	.02	+
14	568	99	40.7	54.5	.02	+
15	1,138	177	24.0	46.9	.001	+
16	860	111	15.7	29.7	.001	+
17	1,492	193	23.9	51.8	.001	+
18	753	110	48.5	71.8	.001	+
19	395	67	44.1	83.6	.001	+
20	783	115	37.8	63.5	.001	+
All Schools Combined	(18,870)	(3,109)	(35.2)	(60.2)	(.001)	

[a] Respondents are students who were administered questionnaires and tests.

[b] Non-Respondents are students for whom data are missing on either questionnaires or tests, or both.

[c] Probability levels are based on the Chi-square test.

[d] H_1 was that non-respondents are more likely to have high absenteeism rates than are respondents. P of H_o (where H_o is null hypothesis) is $<.0001$. Students' absenteeism rates were dichotomized as follows: .05 or higher = "high" and $<.05$ = low.

TABLE III-7

RESPONSE BIAS ASSOCIATED WITH AVERAGE GRADE PERFORMANCE IN ENGLISH

School Identification Number	Number of Respondents[a]	Number of Non-Respondents[b]	% Respondents With English Grades Below School Median	% Non-Respondents With English Grades Below School Median	P is Less Than[c]	Sign Test[d]
01	398	75	49.7	72.0	.001	+
02	800	62	49.8	66.1	.02	+
03	815	216	52.8	59.7	.10	+
04	855	119	47.7	58.8	.05	+
05	1,321	164	44.5	70.7	.001	+
06	1,640	584	43.5	49.3	.02	+
07	962	192	60.5	74.5	.001	+
08	2,017	419	50.8	69.0	.001	+
09	407	52	58.0	73.1	.05	+
10	505	35	56.8	57.1	.98	+
11	1,756	191	51.5	60.2	.05	+
12	509	59	44.4	62.7	.01	+
13	908	90	54.4	70.0	.01	+
14	568	101	53.5	56.4	.70	+
15	1,138	177	47.6	57.6	.02	+
16	865	115	44.0	53.0	.10	+
17	1,488	190	58.6	62.6	.30	+
18	758	110	48.1	62.7	.01	+
19	399	70	53.4	68.6	.02	+
20	780	115	53.1	61.7	.10	+
All Schools Combined	(18,384)	(3,136)	(50.7)	(61.5)	(.001)	+

[a] Respondents are students who were administered questionnaires and tests.

[b] Non-Respondents are students for whom data are missing on either questionnaires or tests, or both.

[c] Probability levels are based on the Chi-square test.

[d] H_1 was that non-respondents are more likely to have low English grades than are respondents. P of H_o (where H_o is null hypothesis) is $<.0001$.

Academic Performance. Data given in Table III-7 indicate a consistent and sizable difference in the average grade performance in English of respondents and non-respondents, with the latter having systematically lower achievement. This is true both within schools (significant differences in fifteen schools), in the pattern across schools (as indicated by the sign test), and for all schools combined. Just as in the case with absenteeism, such a bias is not surprising.

Thus, with regard to the representativeness of the sample, the results may be summarized as follows. There is almost no difference in the proportion of boys and girls taking the questionnaires and tests. Secondly, there is a tendency for more underclassmen to respond to both sets of instruments than upperclassmen. Thirdly, students with poor attendance records and those having low academic performance took the tests and questionnaires less frequently. The crucial question which must be raised at this point is: What effect does the bias associated with attendance and performance have on the validity of findings regarding the relative effects of climate variables on the various measures of academic behavior of individual students? Two different considerations suggest that the missing data do not seriously affect the substantive findings of the study.

First, there is no reason to suspect that the loss of cases has any appreciable influence on the validity and reliability of the various dimensions of school climate which are employed as the independent variables in the analysis. As noted earlier in this chapter, data from student questionnaires are aggregated and combined with the aggregated responses from teacher questionnaires to construct the measures of various dimensions of school environment. Therefore, it is important that a large sample of the students and faculties of the schools complete the questionnaires. As Table III-3 indicates, the response rate for students in each of the twenty schools represents a large proportion of the student population. Overall, the response rate for teachers is even higher--91.4 percent--as shown in Table III-8. For individual schools, the percentage of teachers returning the questionnaires ranges from 80 percent to 100 percent, with six institutions having complete returns. As noted by Selvin and Hagstrom (1963, pp. 404-409), if aggregative group variables are based on a large sample of the total membership, they give highly accurate descriptions of the collectivities on the dimensions studied.

Secondly, comparing the effects of various dimensions of school climate on one of the dependent variables for those students for whom data are available on both tests and questionnaires and those who took the questionnaires reveals that the loss of 5.6 percent of the cases resulting from students taking questionnaires but not academic tests does not effect the magnitude of the relationships. More specifically, the effects of six dimensions of school climates (to be described later in this chapter) on one dependent variable--students' college plans--can be compared for the respondents who took the questionnaires (90.9 percent of the total student populations of the twenty schools) and those who were administered the questionnaire but not the AR and MATH tests (5.6 percent of the total student populations of the twenty schools). The effect parameters for making these comparisons are presented in Table III-9. The differences for the two categories of respondents are negligible--in fact the size of the effects is almost identical. Since the effects of the six dimensions of school climate on college plans and math performance are quite similar (as shown in IV-1 and IV-2 of Chapter IV), there is reason to believe that the results for

TABLE III-8

RESPONSE RATES BY SCHOOLS FOR TEACHER QUESTIONNAIRES

School Identification Number	Number of Teachers	Number of Teachers Completing Questionnaires	Percent of Teachers Completing Questionnaires
01	34	34	100.0
02	41	41	100.0
03	59	49	83.1
04	51	46	90.2
05	64	64	100.0
06	98	88	89.4
07	52	43	82.7
08	110	109	99.1
09	19	19	100.0
10	47	44	93.6
11	80	66	82.5
12	45	41	91.1
13	53	47	88.7
14	42	38	90.5
15	61	61	100.0
16	38	35	92.1
17	90	80	88.9
18	58	46	79.3
19	30	24	80.0
20	54	54	100.0
Total for All Schools	(1,126)	(1,029)	(91.4)

TABLE III-9

ZERO-ORDER EFFECTS OF SIX DIMENSIONS OF SCHOOL CLIMATE ON COLLEGE PLANS OF STUDENTS COMPLETING QUESTIONNAIRES AND THOSE COMPLETING TESTS AND QUESTIONNAIRES

Climate Dimensions	Estimates of Effect for Students Administered Questionnaires[a]	Estimates of Effect for Students Administered Tests and Questionnaires[a]
Dimension I	-.156	-.158
Dimension II	-.130	-.134
Dimension III	.135	.134
Dimension IV	-.117	-.118
Dimension V	.139	.139
Dimension VI	.069	.072
Percent of Total Student Populations of Twenty Schools	(90.9%)	(85.3%)

[a] These measures, which are used throughout the analysis, will be explained in detail later in this chapter. Briefly described, they are estimates of the proportions of variation in individual students' college plans explained by each of the climate dimensions. All of the effect estimates in the table are significant beyond the .01 level.

college plans in Table III-9 are generalizable to the effects of school climate on mathematics performance. Thus, it seems tenable to conclude that the loss of cases from the student populations does not appreciably affect the validity of findings regarding the effects of school environment on the academic behavior of students.[29]

Measurement of Variables

As discussed in Chapters I and II, the type of analysis conducted in this project is contextual, which involves characterizing students by a number of different aspects of the school they attend and then determining how students who are similar in personal and background characteristics differ in their academic behavior according to the context of the school. Thus, there are three different classes of variables included in the analysis: (1) independent variables which are measures of various dimensions of school climate or environment; (2) "intervening" personal attributes such as sex, mental aptitude, year in school, and socio-economic background which are viewed as mediating links between the school environment and individuals' academic behavior; (3) and dependent variables which consist of three different types of academic behavior; namely, personal values regarding intellectualism and achievement, educational plans, and academic achievement in the form of performance on the mathematics achievement test and English grade-point average.

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[29] Findings from other research in this general area revealed that missing data--both in cross-sectional analysis and panel analysis--did not alter the results obtained (McDill and Coleman, 1965, pp. 115 and 121).

The development of the measures for each of the three categories of variables will be described in detail here.

Dimensions of the Educational and Social Climates

The procedure used in developing this measure is based to a considerable extent on a methodological formulation by Selvin and Hagstrom (1963). Their objective was to develop a tool for describing and classifying a small number of groups[30] in terms of a large number of variables in order that group effects on the variations in behavior of members could be determined. They describe five basic steps involved in using the procedure, four of which are relevant here:

(1) Select a set of formal groups from which the same types of data are available for each member. They emphasize that the data obtained may be based on members treated as respondents, informants, or both.

(2) Compute aggregative characteristics for each group. As defined in Chapter I, aggregative characteristics are properties based on smaller units within the group. The larger the number of observations in each group, the more reliable the summarizing measures (such as percentages, means, or medians) because errors of response attributable to individual idiosyncracies or facetiousness are cancelled and also because individual "perspectivistic distortion" is reduced.

(3) Compute the correlation of each pair of aggregative variables for all groups. This produces correlations of greater magnitude than those calculated from individual observations.

(4) Factor analyze the correlation matrix, rotate the factors, and compute factor scores for each group on each interpretable factor. Factor analysis and rotation of the factors reduce the large number of variables to a more manageable number of constructs. The computation of factor scores for each group on each factor makes possible further work from the factor analysis such as multiple regression or multivariate analysis.

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[30] They visualize their procedure as being appropriate when the number of groups is too small for cross-tabulation of group attributes and most useful when the number of groups is between 15 and 200 (p. 401).

In adapting Selvin's and Hagstrom's procedure to develop measures of various dimensions of school climate, thirty-nine different aggregative characteristics of the schools, based upon data from both student and teacher questionnaires, were computed for each school. All of these thirty-nine variables are scales or single items which treat the individual--both student and teacher--as an informant, not as a respondent. Stated differently, all of the variables used in the measures of school climate are the individuals' perceptions of the environment, not information about his own attitudes or personal characteristics. Informant data rather than respondent data are used for two reasons. First, it helps to clarify what Tannenbaum and Bachman (1964, p. 593) refer to as the "conceptual haziness" about variables which are characterizations of both the institution and the individual. They state:

> "Research in group or organization functioning would do well to distinguish effects which are uniquely structural. While it may be easy enough to denote conceptually some variables that apply uniquely to structure and have no meaningful counterparts on the individual level, the fact that much social research must fall back on individual responses creates a difficulty. While the concepts may be structural, the measures may be contaminated by individual effects."

Although student and teacher perceptions of school environments are based on individual responses, they would appear to approximate more closely, both conceptually and operationally, structural level variables than do individual responses to items which treat the subject as a respondent. Stated more succintly, the former are less likely to be contaminated by individual effects than are the latter. Two recent studies using the College Characteristics Index support such an argument. McFee (1961) showed that student perceptions of their college environments are independent of personality needs, and Kirk (1965, p. 94) found that the discrepancy between student environmental reports and the averages of the department in which they were enrolled at Carnegie Tech were uncorrelated with various indicators of their cultural and socio-economic background.

In the present study, student perceptions of environment (as measured by scores on a number of scales in different conceptual areas constructed from true-false items) are also not systematically related to a number of personal and social background characteristics; specifically, sex, year in school, mental aptitude, and father's education.

Even for the few environmental scales which are significantly related to these personal characteristics, the effects of such personal distortions on the measures of school environment are negligible because (1) individuals' scale scores on each conceptual area are all combined for each dimension of the school environment and (2) all variables based on students' perceptions are combined with teachers' perceptions for each dimension of the school environment.

The second reason informant data rather than respondent data are used in measuring different aspects of the school climate is that the former appear to be more valid than the latter. In their work Selvin and Hagstrom (1963, p. 409) raised the issue of whether informant data are more appropriate than respondent data as measures of environmental characteristics. They noted that no research had been conducted which compared the two different approaches. Fortunately, limited empirical evidence on this problem is available in this study. In the student questionnaire there are three pairs of items--numbers 141-146--tapping three different aspects of intellectual orientation. The first item in each pair treats the subject as a respondent, and the second item is identical except that the subject is treated as an informant. The effects of these two types of items, used as climate measures, on variation in students' college plans and performance on the mathematics test are given in Tables III-10 and III-11. A comparison of the results in Table III-10 with those in Table III-11

TABLE III-10

EFFECTS OF CLIMATE MEASURES ON COLLEGE PLANS AND MATHEMATICS TEST PERFORMANCE USING STUDENTS AS RESPONDENTS

Climate Measures[a]	Effect of Climate Measures on College Plans (a_i)[b]	Effect of Climate Measures on Math Performance (a_i)[b]
Question 141[c] in Student Questionnaire	-.027	-.032
Question 143[c] in Student Questionnaire	.135	.104
Question 145[c] in Student Questionnaire	.131	.132

[a] The climate measure for each question was obtained by ranking the schools according to the proportion of students who gave a "1" response to it and then collapsing the twenty schools into quartiles. A detailed explanation of this procedure is presented later in this chapter.

[b] The a_i's represent the proportion of variation in the dependent variable accounted for by the particular climate measure. This measure of effect of one or more independent variables on a dichotomized dependent variable is found in Coleman (1964, Chapter 6) and is discussed at length later in this chapter.

[c] The number refers to the question in the student questionnaire found in Appendix A. Each question was dichotomized between the "1" response and all other responses.

TABLE III-11

EFFECTS OF CLIMATE MEASURES ON COLLEGE PLANS AND MATHEMATICS TEST PERFORMANCE USING STUDENTS AS INFORMANTS

Climate Measures[a]	Effect of Climate Measures on College Plans (a_i)[b]	Effect of Climate Measures on Math Performance (a_i)[b]
Question 142[c] in Student Questionnaire	.106	.145
Question 144[c] in Student Questionnaire	.152	.179
Question 146[c] in Student Questionnaire	.135	.110

[a] The climate measure for each question was obtained by ranking the schools according to the proportion of students who gave a "1" response to it and then collapsing the twenty schools into quartiles. A detailed explanation is presented later in this chapter.

[b] The a_i's represent the proportion of variation in the dependent variable accounted for by the particular climate measure. This measure of effect of one or more independent variables on a dichotomized dependent variable is found in Coleman (1964, Chapter 6) and is discussed at length later in this chapter.

[c] The number refers to the question in the student questionnaire found in Appendix A. Each question was dichotomized between the "1" response and all other responses.

indicates that with one exception--questions 145 and 146 in relation to mathematics performance--the climate measures based on informant data are more strongly associated with students' academic behavior than are those derived from respondent data. In fact, one of the measures based on an item which treats students as respondents--question 141--actually has a very slight negative relationship to students' educational plans and to math performance. Thus, for two different reasons it seems more appropriate to develop measures of school climate from subjects' perceptions of the environment rather than from their personal values and attitudes.

A list of the 39 school characteristics used in deriving dimensions of school climate by factor analysis is presented in Table III-12[31]. Twenty-three of these variables are from student questionnaires and 16 from teacher

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[31] As noted by Selvin (1960, p. 48), a summarizing measure such as the mean or median is a meaningful representation of a distribution only if the distribution is unimodal. There is no problem of "bimodality" of the distributions

TABLE III-12

DESCRIPTION OF THIRTY-NINE VARIABLES FACTOR ANALYZED TO OBTAIN
MEASURES OF EDUCATIONAL AND SOCIAL CLIMATES OF SCHOOLS

Variable Number	Source	Description of Variable	Number of Items Used in Measuring Variable
1	Student Questionnaire	Median School Scale Score on F.P.[a] Toward Scientism	4
2	" "	Median School Scale Score on S.P. Toward Scientism	4
3	" "	Median School Scale Score on S.P.[b] Toward Social Conformity	2
4	" "	Median School Scale Score on S.P. Toward Estheticism	4
5	" "	Median School Scale Score on F.P. Toward Humanism	5
6	" "	Median School Scale Score on F.P. Toward Vocationalism	2
7	" "	Median School Scale Score on F.P. Toward Enthusiasm	3
8	" "	Median School Scale Score on F.P. Toward Supportiveness	4
9	" "	Median School Scale Score on F.P. Toward Independence	4
10	" "	Median School Scale Score on S.P. Toward Intellectualism	3
11	" "	Median School Scale Score on S.P. Toward Competition-Achievement	4
12	" "	Median School Scale Score on F.P. Toward Intellectualism	3
13	" "	Median School Scale Score on F.P. Toward Competition-Achievement	4

TABLE III-12 (continued)

Variable Number	Source	Description of Variable	Number of Items Used In Measuring Variable
14	Teacher Questionnaire	Median School Scale Score on F.P. Toward Scientism	4
15	" "	Median School Scale Score on S.P. Toward Scientism	4
16	" "	Median School Scale Score on S.P. Toward Social Conformity	2
17	" "	Median School Scale Score on S.P. Toward Estheticism	4
18	" "	Median School Scale Score on F.P. Toward Humanism	5
19	" "	Median School Scale Score on F.P. Toward Vocationalism	2
20	" "	Median School Scale Score on F.P. Toward Enthusiasm	1
21	" "	Median School Scale Score on F.P. Toward Supportiveness	3
22	" "	Median School Scale Score on F.P. Toward Independence	4
23	" "	Median School Scale Score on F.P. Toward Academic Autonomy	2
24	" "	Median School Scale Score on S.P. Toward Intellectualism	3
25	" "	Median School Scale Score on S.P. Toward Competition-Achievement	4
26	" "	Median School Scale Score on F.P. Toward Intellectualism	3
27	" "	Median School Scale Score on F.P. Toward Competition-Achievement	3

TABLE III-12 (continued)

Variable Number	Source	Description of Variable	Number of Items Used In Measuring Variable
28	Student Questionnaire (Question 142)	Percent of Students in School Saying it is "extremely important" to Other Students to Achieve High Grades	1
29	Student Questionnaire (Question 144)	Percent of Students in School Saying it is "extremely satisfying" to Other Students to Work Hard on Studies	1
30	Student Questionnaire (Question 146)	Percent of Students in School Saying Other Students Admire Brightness "very much"	1
31	Student Questionnaire (Question 263)	Social Cohesion Among Students--Percent of Students in School Disagreeing that "a few students control things"	1
32	Student Questionnaire (Question 157)	Importance of Family Background for High Status Among Other Students of Same Sex--Median Rank on Item for School Among Six Alternatives	1
33	Student Questionnaire (Question 158)	Importance of Being a "leader in activities" for High Status Among Other Students of Same Sex--Median Rank on Item for School Among Six Alternatives	1
34	Student Questionnaire (Question 159)	Importance of "having a nice car" (boys) or "clothes" (girls) for High Status Among Other Students of Same Sex--Median Rank on Item for School Among Six Alternatives	1
35	Student Questionnaire (Question 160)	Importance of "high grades, honor roll" for High Status Among Other Students of Same Sex--Median Rank on Item for School Among Six Alternatives	1
36	Student Questionnaire (Question 161)	Importance of "being an athletic star" (boys) or "cheerleader" (girls) for High Status Among Other Students of Same Sex--Median Rank on Item for School Among Six Alternatives	1

TABLE III-12 (continued)

Variable Number	Source	Description of Variable	Number of Items Used In Measuring Variable
37	Student Questionnaire (Question 162)	Importance of "knowing a great deal about intellectual matters" for High Status Among Other Students of Same Sex--Median Rank on Item for School Among Six Alternatives	1
38	Teacher Questionnaire (Question 60)	Dedication of Teachers to Value of Developing Intellectual Skills of Students as Contrasted with Technical or Vocational Skills--Percent of Teachers Giving Intellectual Response to Item	1
39	Teacher Questionnaire (Question 66)	Percent of Teachers in School Who Believe that Being "too easy with schoolwork" is No Characteristic of the Majority of Their Colleagues	1

[a] Abbreviation for Faculty Press

[b] Abbreviation for Student Press

questionnaires. The first 27 variables in the table are scales of two or more true-false items (except variable 20, a single-item indicator) which are adaptations of Thistlethwaite's version (1963) of the College Characteristics Index and Stern's High School Characteristics Index (1962) discussed earlier in this chapter and in Chapter II. Variables 1 through 13 are based on student reports or perceptions of both student and faculty behavior, and variables 14 through 27 are based on faculty reports of both student and faculty behavior. Thus, two different measures of several diverse conceptual areas of the school or global environment are included in the measurement. Table B-1 in Appendix B gives the items belonging to each of the conceptual areas of school environment for both teacher reports and those of students. The scales which comprise the first 27 variables in Table III-12 are presented in sequential order in Table B-1. This table also gives the percentages of subjects--either teachers or students--who answered the item in the keyed direction, the correlation between item response and total scale score, and Kuder-Richardson Formula 20 estimates of reliability.[32]

Finally, the table gives an estimate of reliability for each scale, based on the Spearman-Brown Prophecy Formula (Guilford, 1956, p. 452), for ten-item scales having the same characteristics as the existing scales. These prophecy reliabilities were computed in order to give estimates of reliabilities for scales with a larger number of items and the same characteristics as those actually used and also to permit comparisons of reliabilities among existing scales. This table reveals that the scales have only moderate internal consistency. For example, prophesying scales of ten items in length (using the Spearman-Brown Formula) having the same characteristics as the present scales, only 10 of 26 would have reliabilities of .70 or higher. However, this does not present a problem in using these scales in the factor analysis since individuals' scores on each scale are aggregated and then converted into indices of school climate. The aggregating procedure greatly reduces the random error of responses and produces highly reliable measures of school climate.

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underlying the 39 aggregative variables in Table III-12. A distribution was defined as unimodal if its median was either in the modal category or the category adjacent to the one containing the mode. The 780 distributions (39 variables x 20 schools) were examined, and more than 99 percent of them met this criterion. Furthermore, in roughly ninety-five percent of the distributions the category containing the second largest number of respondents was adjacent to the mode.

[32] As Table III-12 indicates, the number of items in the "press" scales varies from two to five, with one conceptual area--variable 20, faculty perception of F.P. for Enthusiasm--having only a single item. Obviously, it would have been preferable to have both a large number of items (say ten) for each conceptual area and the same number of items in each scale. This was not feasible for two reasons. First, there was not space in the questionnaire for a large number of items in each conceptual area, and it was more important to have several conceptional areas tapped by only a few items in each than only a limited number of scales with a sizable number of items in each. Secondly, the authors were simply unable either to adapt existing items from the CCI or HSCI or construct items which were salient for high school students or teachers in several of the conceptual areas. One of the areas where this was especially true was S.P. for Social Conformity.

One other noteworthy point in Table B-1 is the tendency for scales based on teacher reports to have higher KR 20's than those for student reports; in eight out of twelve comparisons for the same conceptual area the reliability coefficients for teacher perceptions are greater than those for students, suggesting that teachers are more consistent in their evaluations of school climate than are students. Related to this point is the question of the extent of agreement between students and teachers in their perceptions of these diverse conceptual areas. Table III-13 gives data on this topic, presenting the correlations between median school scale scores for teachers and students for the thirteen "press" areas common to student and teacher questionnaires. Overall, there is a substantial degree of agreement between how students and teachers perceive various aspects of their school environments, with a mean correlation of .70 for the thirteen areas. These data provide another indication of the high degree of reliability of the aggregated informants' reports of different aspects of the educational and social climates of their schools.

TABLE III-13

PRODUCT-MOMENT CORRELATIONS BETWEEN MEDIAN SCHOOL PRESS SCORES FROM STUDENT AND TEACHER QUESTIONNAIRES

Conceptual Area	r
F.P. Toward Scientism	.81
S.P. Toward Scientism	.91
S.P. Toward Social Conformity	.86
S.P. Toward Estheticism	.58
F.P. Toward Humanism	.73
F.P. Toward Vocationalism	.74
F.P. Toward Enthusiasm	.47
F.P. Toward Supportiveness	.46
F.P. Toward Independence	.76
S.P. Toward Intellectualism	.82
S.P. Toward Competition-Achievement	.88
F.P. Toward Intellectualism	.62
F.P. Toward Competition-Achievement	.45

The last twelve variables of Table III-12 which were entered into the factor analysis are single-item indicators of environment. Ten of them are drawn from the student questionnaires and only two from teacher questionnaires. Three of these (variables 28-30) are student reports of student values regarding academic achievement and intellectualism, and one (number 31) is an indicator of the degree of social cohesion among students. Six of the remaining eight variables (numbers 32-37) are student perceptions of various criteria for high social status among students of the same sex. Four of these six criteria are extra-curricular or ascriptive, and two are achievement standards. The final two variables in the table are teachers' reports of the intellectual and academic productivity standards of their colleagues.

The thirty-nine aggregated measures of school climates were factor analyzed in hopes of simplifying students' and teachers' perceptions of school environment by abstracting a limited number of basic dimensions underlying these perceptions.[33] Stated differently, the purpose of the factor analysis is to explain the observed relations among the large number of climate perceptions in terms of simpler relations.

The principal component solution was used to extract the factors.[34] The eigenvalue criterion developed by Kaiser (1959) was used to determine the number of factors to be extracted. As noted by Harman (1960, p. 363), this is highly practical criterion based on a number of considerations such as statistical significance, algebraically necessary conditions, psychometric reliability, and psychological meaningfulness. Kaiser's recommendation is that the number of common factors should be equal to the number of eigenvalues greater than one of the correlation matrix, using unities in the diagonal of the original correlation matrix.

The means and standard deviations of the scores for the thirty-nine variables are reported in Table III-14. The eigenvalue criterion resulted in eight factors being extracted. The eigenvalues for each of the factors and the cumulative proportion of total variance accounted for by them are found in Table III-15, which also shows that 90 percent of the total variance is accounted for by these eight hypothetical constructs.

The factors were rotated to simple structure using the Varimax criterion. Only the first six factors were retained in the analysis because factors VII and VIII were either unique or substantively uninterpretable.[35] Inspection of

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[33] This procedure was used by Selvin (1960) in his study of the effects of leadership climate in a military installation on the off-duty behavior of enlisted men. (See Table B-2 in Appendix B for the matrix of correlations among the thirty-nine variables).

[34] The program for factor extraction and orthogonal rotation on the I.B.M. 7094 computer is part of the U.C.L.A. Biomedical Series. See "BMDO3M, General Factor Analysis," in Biomedical Computer Programs, Health Sciences Computing Facility, University of California, Los Angeles, January 1, 1964, pp. 169-184.

[35] Although a number of statistical criteria have been developed in addition to the eigenvalue to determine the number of factors to be extracted, the final

TABLE III-14

MEANS AND STANDARD DEVIATIONS FOR THIRTY-NINE VARIABLES WHICH WERE FACTOR ANALYZED

Variable Number	Mean	Standard Deviation
1	2.120	.323
2	2.224	.535
3	1.879	.199
4	2.304	.310
5	3.745	.481
6	1.705	.163
7	2.330	.196
8	3.469	.325
9	2.941	.333
10	2.042	.333
11	3.026	.330
12	2.930	.227
13	3.080	.288
14	2.772	.370
15	2.748	.799
16	2.026	.312
17	3.271	.577
18	4.775	.480
19	1.517	.346
20	1.158	.245
21	3.285	.145
22	4.039	.228
23	2.218	.250
24	2.144	.504
25	3.378	.555
26	3.098	.217
27	2.750	.386
28	14.757	4.605
29	8.831	2.580
30	38.665	9.119
31	61.571	7.652
32	4.677	.534
33	2.539	.212
34	3.458	.368
35	4.128	.380
36	2.803	.399
37	5.730	.322
38	54.490	23.483
39	87.030	11.350

TABLE III-15

EIGENVALUES AND CUMULATIVE PROPORTION OF TOTAL VARIANCE OF THIRTY-NINE VARIABLES ACCOUNTED FOR BY EIGHT FACTORS

Factor Number	Eigenvalue	Cumulative Proportion of Total Variance
1	15.432	.396
2	5.712	.542
3	4.070	.647
4	3.205	.729
5	2.404	.790
6	1.915	.839
7	1.294	.873
8	1.077	.900

Table III-15 shows that the first six unrotated factors account for almost 84% of the total variance. Furthermore, as shown in Table III-16 (under the column labelled h^2 which is the heading for the communalities for the 39 variables), the six factors explain more than 80 percent of the variance for 28 of the 39 variables. Thus, it can be safely concluded that the six factors summarize with a high degree of precision the information contained in the original thirty-nine variables.

The rotated factor loadings and the communalities appear as Table III-16. Using Harman's procedure (1960, p. 177) for approximating the standard error of factor loadings, loadings of greater than .483 are significant at the .05 level.[36] Only loadings significant at the .05 level or beyond appear in the table. An inspection of the communalities reveals that with one exception--variable 21--more than 61 percent of the total variance of each variable is accounted for by the six factors. Variable 21 had its only significant loading, .861, on factor VII which was dropped from the analysis. The only significant loading on factor VII was variable 21, indicating that the construct was unique and thus had little explanatory power.

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decision on when to stop factoring and how to interpret factors has to rest, as Selvin (1960, p. 184) emphasizes, on extra-statistical or substantive standards.

[36] Harman's procedure was brought to the authors' attention by Cooley and Lohnes (1962, p. 172).

TABLE III-16

ROTATED VARIMAX FACTOR MATRIX AND COMMUNALITIES[a]

Variable Numbers and Descriptions	Factors						
	I	II	III	IV	V	VI	h^2
Press Scales from Student Questionnaire:							
1. F.P. for Scientism				-.901			.918
2. S.P. for Scientism				-.735			.847
3. S.P. for Social Conformity		.517				-.722	.865
4. S.P. for Estheticism		-.569			.574		.759
5. F.P. for Humanism					.621		.846
6. F.P. for Vocationalism			-.676				.745
7. F.P. for Enthusiasm		-.935					.927
8. F.P. for Supportiveness		-.832					.803
9. F.P. for Independence		-.823					.945
10. S.P. for Intellectualism		-.672					.840
11. S.P. for Competition-Achievement	-.853						.929
12. F.P. for Intellectualism		-.948					.978
13. F.P. for Competition-Achievement		-.830					.932
Press Scales from Teacher Questionnaire:							
14. F.P. for Scientism				-.883			.803
15. S.P. for Scientism	-.510			-.756			.911
16. S.P. for Social Conformity						-.736	.837
17. S.P. for Estheticism			.526		.700		.895
18. F.P. for Humanism					.905		.913
19. F.P. for Vocationalism[b]							.669
20. F.P. for Enthusiasm	-.751						.761
21. F.P. for Supportiveness[c]							.136
22. F.P. for Independence				-.628			.760
23. F.P. for Academic Autonomy					.870		.818
24. S.P. for Intellectualism	-.544				.514		.932
25. S.P. for Competition-Achievement	-.748				.536		.946
26. F.P. for Intellectualism	-.673	-.483					.838
27. F.P. for Competition-Achievement	-.614						.699

TABLE III-16 (continued)

Variable Numbers and Descriptions	Factors						
	I	II	III	IV	V	VI	h^2
Single Items from Student Questionnaire:							
28. Q. 142 Importance to Students to Achieve High Grades	-.910						.918
29. Q. 144 Satisfying to Students to Work Hard on Studies	-.893						.879
30. Q. 146 Extent to Which Students Admire Brightness	-.849						.814
31. Q. 263 Degree of Social Cohesion Among Students			.789				.823
32. Q. 157 Importance of Family Background for High Social Status			.684				.785
33. Q. 158 Importance of Being a Leader in Activities for High Social Status						.614	.825
34. Q. 159 Importance of Car or Clothes for High Social Status	-.893						.858
35. Q. 160 Importance of High Grades for High Social Status						-.607	.809
36. Q. 161 Importance of Being an Athlete or Cheerleader for High Social Status						.765	.792
37. Q. 162 Importance of Knowledge of Intellectual Matters for High Social Status			-.597			-.731	.936
Single Items from Teacher Questionnaire:							
38. Q. 60 Dedication of Teachers to Developing Students' Intellectual Skills	-.627						.680
39. Q. 66 Dedication of Teachers to Importance of Homework	-.694						.617
Cumulative Proportion of Total Variance	.223	.393	.480	.602	.726	.820	

[a] Only loadings significant at the .05 level (.483 or greater) are included.

[b] Variable had no significant loadings. Its highest loadings were .407, -.416, and -.454 on Factors I, III, and V, respectively.

[c] Variable does not have a significant loading on any of the six factors. Its only significant loading was .861 on Factor VII, which was not retained in the analysis because it was a unique factor having only one variable, number 21, with a significant loading.

The Varimax solution of rotation which was utilized tends to "break up" general factors and distribute part of their variance among other factors. Such a result can be seen in the present analysis by comparing Tables III-15 and III-16. Before the factors were rotated, Factor I was a general factor accounting for 39.6% of the total variance of the thirty-nine climate variables. (See Table B-3 in Appendix B for unrotated loadings on the original eight factors.) However, after the Varimax rotation, Factor I accounts for 22.3% of the total variance. As noted by Cooley and Lohnes (1962, p. 162), the Varimax rotation was designed to "clean up" factors rather than variables which the Quartimax method effects. Thus, this technique produces distinct dimensions of school climate whose effects can then be measured on the academic behavior of individual students.

Definition of Factors

The six factors listed in Table III-16 are interpreted using the variables which have statistically significant loadings on them. Before each of the six factors is defined, it is important to discuss the procedure used in computing school medians for variables 32-37 and the effect the procedure has on the signs of the loadings of these six variables on the six rotated factors. Inspection of questions 157-162 of the student questionnaire (the ranking items used to obtain data for these six variables dealing with the importance of various personal characteristics) indicates that items were ranked inversely to their importance for high status among other students. Thus, for a given school the item having the lowest median value is the most important criterion (among the six) for high status. This scoring system combined with the fact that three of the six factors are negative and three are positive[37] makes it difficult to interpret the signs of the loadings of variables 32-37 on the six factors.[38] One example will perhaps make the loadings of these variables easier for the reader to interpret. Factor III is labelled "egalitarian intellectualism." Variable 37 has a negative loading of -.597 on this factor. Given the inverse scoring system for variable 37, this negative loading means that it is tapping an aspect of school environment emphasizing the importance of intellectual values for high status among other students. On the other hand, variable 32 has a loading of .68 on this factor, indicating that a school having a high score on this variable would be one in which ascribed social position is not important for high social status among one's peers.

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[37] Factors are positive and negative in the sense that a majority of the loadings have + or - signs. For example, Factor I is negative since all of the significant loadings have a - sign. The opposite is true for Factor V.

[38] The reader is asked to bear with this inconvenience. After the factor analysis was completed and much of the analysis of data was conducted which depended on the results of the factoring, a modification of the factor analysis computer program was received from the Biomedical Computer Program Center at U.C.L.A. This modification of the program forces the components of the factor matrix corresponding to the eigenvectors to have more positive than negative factors. Using this modified version of the computer program would perhaps have minimized the number of negative factors, making the interpretation and discussion of them less unwieldy. Of course, whether the factors extracted are positive or negative is in no way a reflection of the adequacy of the factor solution.

Factor I. Absence of Academic Emulation

This factor, statistically more important than any other, has all negative loadings. A school having a high positive score on this factor could be appropriately described as lacking academic excellence. The thirteen items having significant loadings cover a variety of topics about the educational atmosphere of the school. Only one of the variables (number 15) deals with specific subject matter--a lack of student pressure for scientism as seen by faculty. Variable 34 taps a non-curricular aspect of school environment. It has a high negative loading, indicating that those school climates low in competitiveness and intellectualism are ones in which having an automobile for boys (or clothes for girls) is important for high prestige among student peer groups. The remaining eleven variables deal with topics which set the general achievement and intellectual tone of the school environment. Seven of these are faculty reports of the environment (mainly "press" scales based on T-F items) and four are student reports. These eleven variables deal with student values attached to achieving grades and academic brilliance, faculty and student pressures to be academically competitive, faculty values regarding emphasis on developing academic versus technical skills of students (variable 38), and faculty norms with respect to amount of assigned homework.

Factor II. Student Perception of Absence of Intellectualism-Estheticism

This construct, like the preceding one, is a negative factor. However, in contrast to Factor I, which has a preponderance of variables based on faculty reports of the environment, it is composed of nine variables with significant loadings drawn, with one exception (variable 26), from student perceptions of school environment and consisting only of "press" scales. Nevertheless, the content of this factor is similar to Factor I in that four of the nine scale areas are found in the first factor. One possible explanation for the failure of these scales to have high loadings on Factor I, as do the same scale areas based on faculty perceptions, is the lower reliability of the former.[39] One of the nine variables deals specifically with achievement-competition (faculty press) whereas four of them measure teacher or student pressures for intellectualism, that is, for an intrinsic value placed on the acquisition of knowledge. Finally, two of the variables, numbers 7 and 8, (especially #8) are tapping an affective component in the relations between teachers and students similar to what Cogan (1956, p. 330) refers to as preclusive (i.e., aggressive, distant, and hostile) behavior. Thus, those schools which are low in intellectualism-estheticism, as perceived by students, are also relatively lacking in warm, congenial, and supportive relations between students and staff. Finally, this type of school is characterized to a degree by pressures for conformity (variable 3) or lack of emphasis on individualism.[40]

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[39] See pp. 36-37 of this chapter for a comparison of reliabilities.

[40] However, this scale area, both teacher and student perceptions, has a higher loading on Factor VI.

Factor III. Cohesive and Egalitarian Estheticism

This third factor measures the extent to which the social systems of the schools emphasize intellectual criteria for status (variable 37) as opposed to the ascribed criteria of family background (variable 32) and the extent of social integration (#31) among students. It is noteworthy that variables 6 and 17 have opposite loadings on this factor, indicating that those schools in which the faculty place little stress on practicalness in their teaching (F.P. for Vocationalism) and instead have a theoretical orientation are the ones in which the student bodies value and are sensitive to art, music, and literature--both inside and outside the classroom. Thus, a school with a high positive score on this factor has a student body which is more cohesive, more egalitarian, and more committed to an understanding of the humanities and other intellectual activities than a school with a low score (Herr, 1965, p. 680).

Factor IV. Absence of Scientism

This entity, like I and II, is negative. Schools having a high positive score on it could be appropriately described as not having a scientific emphasis. Of the factors discussed to this point, Factor IV is the most conceptually pure, with four of the five variables dealing solely with the degree of scientific ferment in the school. The other variable with a significant loading--number 22, F.P. for Independence as seen by the teachers--is theoretically consistent with the concept of scientism. The four items in the Independence scale involve two separate but related domains--objectivity on the part of teachers in their evaluations of students (items 110 and 141) and their encouragement of independent and creative work by students.

Factor V. Humanistic Excellence

This factor has all positive loadings. It also is specific, dealing primarily with faculty pressures toward creating and maintaining student interest in art, humanities, the social sciences, and topics of social concern and student values and activities in these areas (variables 4, 5, 17, and 18). Variables 24 and 25, which are faculty reports of student demands for intellectualism and academic competition, also are significantly correlated with this construct as well as with Factor I, indicating that those schools whose climates stress achievement and "knowledge for knowledge's sake" also encourage excellence in the humanistic tradition.

Factor VI. Academically Oriented Status System

In contrast to the first five factors, this one deals strictly with the social systemic aspects of school environment. In this respect it is most similar to Factor III. However, the two constructs have only one variable in common--number 37. Specifically, Factor VI has isolated criteria for prestige among student colleagues. Of the six variables with significant loadings, four of them are status criteria, and the other two are faculty and student perceptions of the degree of demand for social conformity among students. Schools with high positive scores on the factor have social systems in which student peer groups socially reward intellectualism and high academic performance more than schools with low scores. Furthermore, high-scoring schools place less stress on participation in extra-curricular activities relative to low scoring schools. Schools with high scores also do not demand social conformity on the part of students, suggesting a tolerance of individualism and idiosyncratic behavior.

The names given the above six constructs are somewhat arbitrary since only those variables which have significant loadings were used in defining them. However, as stressed by Selvin (1960, p. 40), the name given a factor always involves individual judgment. In this sense interpreting factors involves abstracting just as does all concept formation, and a concept always contains less than the highly complex and interrelated empirical phenomena to which it refers.

Computation of Factor Scores

Computing a score for each of the twenty schools on each of the six factors permits the results of the factor analysis to be transformed into independent variables for use in the multivariate analysis.

Cooley and Lohnes (1962, p. 164) indicate that estimates of factor scores can be easily obtained from the principal component solution (if unities have been used in the diagonal of the matrix of observed correlations among the n variables) by use of the following formula:

$$F_{ji} = \sum_{k=1}^{n} a_{kj} z_{ki}$$

where F_{ji} = score on Factor j for school i

a_{kj} = loading of variable k on Factor j

z_{ki} = standard score of variable k for school i

i = 1, 20; k=1, 39; j=1, 6 .

Thus, each of the j column vectors of the rotated matrix (i.e., the loadings of the variables on a given factor) is multiplied by the standardized score vector for school i to obtain the j (in this case six) factor scores for school i.[41]

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[41] There are both "exact" and "estimation" procedures for determining factor scores (Harman, 1960, Chapter 16). It is beyond the scope of this presentation to attempt an explication of the complexities of this general area. Harman (1960, p. 338) notes that when the factor model involves common and unique factors, the total number of factors exceeds the number of variables and an inverse does not exist for the factor matrix; that is, the matrix is singular. He says that the accepted procedure under such conditions is to resort to the "best fit" by the least squares method and use an estimation procedure obtained by regression methods. He presents two "long" methods of estimation and a "short" method and demonstrates that the latter yields estimates which are as accurate as the "long" or complete estimation method.

The factor scores for each school are presented in Table III-17. A detailed inspection of this table suggests that the six factor scores are strongly correlated. Table III-18, which gives the product-moment correlations for the data in Table III-17, bears this out. The absolute mean correlation among the six sets of factor scores is .703. Thus, although the rotated factors are by definition uncorrelated (i.e., orthogonal), the factor scores are highly related. This is not an unanticipated finding for two reasons. The first has to do with the mechanics of rotation of the factors. As noted earlier in this chapter, the nature of the Varimax rotation is such that general factors, if present in the principal component solution, are "broken up" and part of the common variance among the variables they account for is redistributed among other factors in the process of "cleaning up" the factors. As discussed when comparing Tables III-15 and III-16, the first unrotated factor was a general factor. The rotation of the factors reduced the proportion of variance the first factor accounted for from 40 percent to 22 percent, causing a school's score on any factor to be partly a function of its score on the general factor. This in turn results in the factor scores being highly correlated.

Secondly, and more important, on purely substantive grounds one would expect schools which are of overall high academic quality (as measured by factor scores on Factor I) to be excellent in subject matter areas such as science (Factor IV) and the humanities (Factor V).[42]

Dependent and Intervening Variables

a. Measures of Achievement and Scholastic Aptitude

The two academic tests, AR and MATH, have been described earlier in this chapter. Reliability estimates for the two tests were obtained separately by grade and sex using the Kuder-Richardson Formula 20. Table B-4 in Appendix B gives these coefficients along with KR-21 coefficients from the Project Talent research. Reliability estimates from the two different formulas are comparable although not identical.[43] Both formulas, depending upon the single administration of a test, underestimate the reliability which would be obtained from alternative methods such as "parallel-forms" or "matched halves." This is because the assumptions underlying both formulas such as (1) all items measure

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[42] Factor scores computed for the unrotated factors were found to be generally uncorrelated. However, the unrotated factors were substantively uninterpretable, as one would expect. Thus, as noted earlier in the chapter, the research problem dictated that a rotation scheme be employed which would give substantive meaning to a number of conceptually distinct dimensions of school environment. This is what the Varimax rotation solution achieves by producing for each factor high loadings for a few variables and the remainder of the loadings zero or near zero. Whether one computes factor scores on rotated or unrotated factors would seem to depend on the nature of the problem being investigated. For example, Cooley and Lohnes (1962, p. 172) cite one of their studies in which it was more profitable to compute factor scores on unrotated factors.

[43] The comparison of the two estimates of reliability is based to a considerable extent on the discussion presented in Flanagan, et al. (1964, pp. 2-16 to 2-18).

TABLE III-17

FACTOR SCORES BY HIGH SCHOOL

	FACTORS					
School	I	II	III	IV	V	VI
01	-9.421	-10.562	3.229	-6.931	7.552	11.766
02	-8.235	-8.536	-2.042	-8.777	3.563	1.242
03	10.152	10.228	-3.279	2.550	-3.470	-3.757
04	-16.632	-1.099	6.640	2.344	4.907	3.411
05	-7.105	-5.636	-2.911	-2.649	-1.327	0.303
06	7.679	5.880	1.678	-0.758	0.739	2.118
07	13.340	7.095	-4.157	9.783	-10.032	-1.138
08	8.094	5.702	-1.891	0.882	-0.819	-3.411
09	4.602	11.931	-8.043	13.537	-7.064	-4.406
10	-10.837	-14.437	5.594	-7.108	10.707	9.170
11	-8.597	0.399	8.120	-4.136	6.358	-0.055
12	8.129	8.558	-1.688	8.641	-1.792	-5.341
13	20.284	6.888	-4.624	5.135	-7.703	-2.752
14	-3.794	8.371	1.204	1.159	-1.936	-6.494
15	0.205	-3.065	-0.989	-0.860	3.073	-0.533
16	7.964	2.173	-7.825	-2.211	-14.386	-5.347
17	-4.001	1.699	1.203	0.064	3.115	-2.900
18	-9.750	-15.279	7.295	-9.384	6.507	7.129
19	8.647	0.710	-2.709	1.937	-5.926	-0.532
20	-10.723	-11.022	5.194	-3.219	7.933	1.527
Range	(highest in academic emulation)	(highest in intell.-esthet.)	(lowest in egalitarian esthet.)	(highest in scientism)	(lowest in humanism)	(least academically oriented status system)
	-16.632 20.284	-15.279 11.931	-8.043 8.120	-9.384 13.537	-14.386 10.707	-6.494 11.766
	(lowest in academic emulation)	(lowest in intell.-esthet.)	(highest in egalitarian esthet.)	(lowest in scientism)	(highest in humanism)	(most academically oriented status system)

TABLE III-18

INTERCORRELATIONS AMONG SIX FACTOR SCORES FOR TWENTY SCHOOLS

		I	II	III	IV	V	VI
I	Absence of Academic Emulation	--	.728	-.744	.635	-.803	-.592
II	Absence of Intell.-Estheticism		--	-.600	.837	-.711	-.813
III	Cohesive and Egalitarian Estheticism			--	-.583	.871	.635
IV	Absence of Scientism				--	-.649	-.642
V	Humanistic Excellence					--	.706
VI	Academically Oriented Status System						--

exactly the same attribute, (2) item inter-correlations are uniform and (3) item reliabilities are uniform, are clearly not met by any "paper and pencil" test. To the extent that the two sets of data fail to meet these restrictive assumptions, both formulas produce values which are systematic underestimates of the true reliability coefficients. The KR-21 coefficients for Project Talent data underestimate the true reliabilities slightly more than the KR-20 coefficients for the twenty high schools because the former formula adds the further stringent assumption that all items in a test are equally difficult. The Project Talent researchers undoubtedly employed the KR-21 formula instead of KR-20 because the former is less demanding of information and, therefore, less laborious to compute. The reliability estimates for all schools combined are quite similar to those for the Project Talent subsample and are satisfactory for short tests. Finally, for all schools combined the MATH test has higher reliability even when the two tests are adjusted for differences in length by the Spearman-Brown Prophecy formula.

Tables B-5 and B-6 in Appendix B present the means and standard deviations for the two tests by grade and sex, as well as comparable data for a representative 10 percent subsample of students (not schools) participating in Project Talent. In calculating the summary measures for the two tests, the Project Talent researchers appropriately weighted the students from each school in order that the means and standard deviations are unbiased estimates of the corresponding population values. Thus, the scores in the last row of the two tables approach as closely as possible those in the U.S. population of high school students in 1960, providing a set of national norms or "bench marks" with which the performance of students in the twenty schools can be compared. In comparing the performance of students for all schools combined with those of Project Talent, it is clear that for both tests all grade and sex groups scored higher than the population of American high school students in 1960. Furthermore, in seventeen of the twenty schools all sex and grade groups scored higher on both tests than did the representative sample of U.S. high school students. The three schools and their exceptions are: School 07--9th, 10th, 11th grade AR, and 12th grade MATH for boys, and for girls all four grades for both tests; School 13--12th grade AR for both sexes; School 19--10th grade AR for girls.

In the twenty schools and in Project Talent, there is a general tendency for the mean scores to increase from grade to grade. However, these differences are small in comparison with differences in performance within grades as measured by the standard deviation (Flanagan, et al., 1964, p. 3-2).

Boys tend to perform higher on both tests than do girls for the Project Talent sample, for all twenty schools combined, and within schools.[44] The sex differences are much smaller for the AR test than for MATH. These sex differences would appear to be a function of greater interest on the part of boys in the two areas measured by the tests (Flanagan, et al., 1964, p. 3-2).

Since these systematic sex and year-in-school differences exist, the raw scores on the two tests were transformed into standard scores by year in school and sex using the C-scale system (Guilford, 1956, pp. 501-503). The C-scale is supposed to divide raw scores into eleven categories with a mean of 5.0, limiting classes of 0 and 10, and a standard deviation of 2.0. It thus has an advantage over standard scores in that no scores have negative signs. This facilitates computations. The procedure did not yield C-score distributions with $\overline{X}$'s of 5.0 and σ's of 2.0 for all the eight sex-grade categories on each of the tests. To obtain these exact values the procedure requires tests with a large number of items (or highly divisible scores) to prevent a concentration of subjects at any point along the continuum.[45] Table III-19 gives the $\overline{X}$ and σ for each sex-grade category for the two tests. None of the 16 distributions yielded C-scales with $\overline{X}$'s and σ's of 5.0 and 2.0, respectively. However, the obtained values do not radically depart from the expected. Certainly the derived scales yielded values more nearly comparable by grade and sex than raw test scores. Furthermore, throughout that part of the analysis involving the two academic tests, both year-in-school and sex of the student are controlled, thus taking into account the limitations of the C-scale standardization.

The second measure of academic achievement for individual students, in addition to scores on the mathematics test, are their English grades. Each student's grades in English during his tenure in high school were first aggregated and then converted to a mean using the following scale: 4.0 = A; 3.0 = B; 2.0 = C; 1.0 = D; and 0.9 or less = F. In using English grades as a measure of

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[44] Schools 10 and 20 provide some exceptions to this statement.

[45] Furthermore, as explained by Guilford (1956, p. 494), scaling assumes that the form of the distribution of the raw scores for the sample is the same as the population distribution. To the extent that this is not the case (and there are numerous reasons why the assumption would not hold), the scaling procedure cannot achieve the exact results predicted by the model.

TABLE III-19

C-SCALE MEANS AND STANDARD DEVIATIONS BY SEX AND YEAR IN SCHOOL FOR AR AND MATH TESTS

Sex-Grade Category	Mean	Standard Deviation
AR Test:		
9th Grade Girls	5.3094	2.0629
10th Grade Girls	5.2688	1.9398
11th Grade Girls	5.1960	1.8613
12th Grade Girls	5.1396	1.8424
9th Grade Boys	5.0537	1.9404
10th Grade Boys	5.1585	1.7813
11th Grade Boys	4.9994	1.8103
12th Grade Boys	5.0771	1.6631
MATH Test:		
9th Grade Girls	4.7343	2.1091
10th Grade Girls	4.7652	2.2688
11th Grade Girls	4.7505	2.2899
12th Grade Girls	4.6640	1.9562
9th Grade Boys	4.3364	2.2535
10th Grade Boys	4.7627	2.3105
11th Grade Boys	4.9193	2.2298
12th Grade Boys	4.8891	2.2178

academic performance, one faces the problem of comparability of grades. Table III-20 gives the mean, standard deviation, and Coefficient of Variability on English grades for students in each school to whom questionnaires were administered. A comparison of the average English grades shows a considerable degree of variation across schools and so does the relative dispersion as measured by the Coefficient of Variability. Thus one should conclude that at best the grades are only roughly comparable across schools. (This problem is considered in detail in the next chapter.)

b. Measure of Intellectual Orientation of Students

The intellectual orientation of students, or academic values, was derived from six questions contained in the student questionnaire, each covering a different topic or situation within the broad realm of intellectualism-achievement. The six items and relevant summary statistics for the scale are presented in Table III-21. The responses to each of the items were dichotomized as specified in the last column of the table, and each respondent was assigned a score

TABLE III-20

MEAN ENGLISH GRADES, STANDARD DEVIATIONS, AND COEFFICIENTS OF VARIABILITY BY SCHOOL

School Identification	Mean	Standard Deviation	Coefficient of Variability[a]
01	2.36	.80	.339
02	2.42	.93	.384
03	2.29	.89	.389
04	2.38	.85	.357
05	1.92	1.16	.604
06	1.95	1.04	.533
07	2.12	.80	.377
08	2.25	.75	.333
09	2.12	.96	.453
10	2.26	.68	.301
11	2.36	.89	.377
12	1.85	.74	.400
13	2.14	.87	.407
14	2.20	.73	.332
15	2.40	.79	.329
16	1.90	1.02	.536
17	2.12	.89	.420
18	2.24	.78	.348
19	2.56	.93	.363
20	2.14	.88	.411

[a] Coefficient of Variability = $\frac{\sigma}{\bar{X}}$.

TABLE III-21

ITEMS IN THE SCALE OF PERSONAL ORIENTATION TOWARD INTELLECTUALISM

Items[a]	Percentage[b]	r[c]	"Intellectual" Responses[d]
25. How Respondent Would Use a Free Hour in School: 1. course; 2. athletics; 3. club or activities; 4. study hall for studying; 5. study hall not for studying.	43.3	.48	1, 4
45. Rank Assigned to "Learning as Much as Possible in School" Among a List of Four Alternatives.	53.2	.46	1, 2
136. How Respondent Would Like to be Remembered in School: 1. brilliant student; 2. athletic star (boys) or leader in activities (girls); 3. most popular.	33.8	.74	1
141. How Important to Respondent to Receive Good Grades: 1. extremely important; 2. important; 3. not important.	33.9	.70	1
143. How Satisfying to Respondent to Work Hard on Studies: 1. extremely satisfying; 2. satisfying; 3. not satisfying; 4. unpleasant.	21.9	.76	1
145. How Much Respondent Admires Students Who are Bright: 1. very much; 2. a little; 3. not at all.	61.8	.59	1
	Scale Reliability[e] = .59		

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[a] Numbers refer to the identification of the items in the student questionnaire.

[b] Percentages are those of a random 10% sample (N = 2,053) of students in each school answering each item in the keyed or "intellectual" direction shown in the right column of the table.

[c] The coefficients represent the item--total score correlation which is Phi as a proportion of its maximum value.

[d] Responses were chosen to dichotomize the items as close as possible to the median.

[e] Scale reliability estimate was obtained from the Kuder-Richardson Formula 20.

based on the number of items he answered in the "high" or "intellectual" direction. Thus, the measure of Personal Orientation Toward Intellectualism (often referred to as POTI)[46] may be appropriately described as a summated binary rating scale.

The reliability estimate of .59 indicates that the items have an acceptable level of internal consistency.

c. Measure of Educational Plans

Students' plans about attending college are inferred from their responses to a single item--Question 270 in the student questionnaire. Students answering "yes, as a full-time student right after high school" were classified as planning to attend college and all others answering the item were classified as not planning to attend. This decision is defended by the fact that a check in each school of the preceding year's graduates who actually attended college yielded percentages approximately the same as the percentage of students classified in this study as having college plans.

d. Measures of Sex, Year in School, and Socio-Economic Background

The measure of each of these three personal characteristics was obtained from single items in the student questionnaire. Father's education is used as the indicator of the socio-economic status of the respondent,[47] although a number of other possibilities, mother's education, father's occupation, and number of books in the respondent's home, were considered.[48] It has the highest average correlation with the other possible indicators and, among the four indicators, is also the best predictor of performance on the MATH test.

The Statistical Procedure

Researchers concerned with separating "group"[49] effects from individual effects have been plagued with serious methodological problems. These problems have to do with obtaining spurious group or individual effects because of researchers' failure to adequately control individual and group variables. Thus, what appear to be group or individual effects may in reality be statistical artifacts. Tannenbaum and Bachman (1964), in a highly original work, have shown conclusively that such spurious effects are frequently obtained because the categories of both types of variables are not sufficiently refined to minimize intracategory variation. Consequently, if the categories of the individual-level variable are not sufficiently refined, they can contaminate group effects and lead to spurious structural effects; on the other hand, if the categories of the group level variable are not precise, they can contaminate individual effects and lead to spurious individual effects.

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[46] Leo C. Rigsby must bear full responsibility for this acronym.

[47] See item 120 in student questionnaire.

[48] It was not feasible to use family income because of the large loss of cases attributable to no answer (36.7%) or "don't know" (1.8%)--38.5% of the total sample.

[49] In this context, "group" is used in its most general sense to refer to social collectivities ranging in complexity from a dyad to an entire society. Sociologists have invented a confusing array of terms to refer to the properties of collectivities which exert effects on the behavior of individual members independent of their personal characteristics. There are structural effects (Blau, 1960), compositional effects (Davis, Spaeth, and Huson, 1961), contextual effects (Coleman, Human Org., 1958, and Lazarsfeld and Menzel, 1961), institutional effects (Coleman, Intro. to Math. Soc., 1964, p. 219), and climate effects (Sills, P.O.Q., 1961). One example of the overlapping of meaning is Lazarsfeld's and

Tannenbaum and Bachman (pp. 589-592) suggest two strategies to minimize the problem of spurious group or individual effects. First, use as many categories as possible on both types of variables, giving greater precision of measures. Of course, a large number of categories result in great variations in the number of cases in different categories which in turn can result in unreliable estimates of the effects of independent variables on the dependent. It is evident that the optimum number of categories to use varies with the particular research problem.

Secondly, a thorough analysis of the relative effects of the group and individual level variables on the dependent variable can be conducted through multiple-regression techniques.

The procedure of analysis employed in this study utilizes both of these strategies. The multivariate technique of analysis used has been shown by Boyle (1966, unpublished) to coincide formally with multiple regression of dummy variables. It is a modification of the multivariate technique developed by Coleman (1964, Chap. 6). Before describing the modification of Coleman's technique, it is important to briefly explicate his original model. The model is a continuous-time, discrete-space Markov process for attribute data in which the magnitude of the effect of the independent attribute on the dependent one, a_i, is obtained by taking the difference between the proportions positive on the dependent attribute under conditions of presence and absence of a dichotomous independent attribute.[50] The generalization of the technique to an _n_-attribute multivariate table is viewed by Coleman as analogous to a factorial design in analysis of variance for quantitative data. For each independent attribute, i, there are 2^{n-1} estimates of a_i obtained from the 2^{n-1} comparisons between presence and absence. This means that for each independent attribute a partialed a_i can be computed by taking the mean 2^{n-1} estimates. In calculating this average, each estimate is weighted inversely proportional to its estimated variance which gives a _weighted_ average partialed a_i' with minimum variance. This weighting procedure is introduced in an attempt to minimize the problem of variation in the number of cases in the cells used to

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Menzel's contextual effects and Blau's structural effects. The present authors probably contribute to this confusion by using the terms "institutional," "environmental," and "climate" effects interchangeably. However, the terms are substituted for one another to lessen redundancy in the text.

[50] The brief explication of the model appearing in this paragraph is taken from McDill and Coleman (1965, p. 115).

compute the effect of a given independent attribute on the dependent one. The weight is

$$\frac{1}{\hat{\sigma}_i^{\,2} + \hat{\sigma}_{.}^{\,2}},$$

where $\hat{\sigma}_i^{\,2} = \frac{P_i\ (1-P_i)}{n_i}$

$\hat{\sigma}_{.}^{\,2} = \frac{P_{.}\ (1-P_{.})}{n}$

P_i = the proportion positive on the dependent attribute with attribute i present;

$P_{.}$ = the proportion positive with attribute i absent; and

n and n_i = the number of cases on which these proportions are based.

The a_i's partition the P's into components accounted for by each of the independent attributes. For example, take the hypothetical case of two independent variables, I.Q. and father's education, which have been dichotomized, and a dependent variable, performance on a mathematics achievement test, which is also dichotomized. Then the proportion with "high" math scores P_{12}, who have "high" I.Q. and fathers with "high" education is $P_{12} = a_1 + a_2 + r$, where r represents the proportion with high math scores that is unexplained.

Expressed in slightly different terms, the model involves finding the minimum $\Sigma(P_i - P_i^*)^2$ and successively minimizing the sum of squared deviations for each of the different components of P_i^*, where P_i is the observed proportion in the i^{th} partition of the sample and P_i^* is the estimated proportion in the i^{th} partition which would be generated by the effect parameters after they have been obtained (Coleman, 1964, p. 195-196).

The model can also be used to measure the effects of polytomous independent attributes, either ordered or unordered (Coleman, 1964, pp. 213-224), on dichotomous dependent attributes by computing an increment of effect for each category above the effects of the categories which rank below it. If, for example, a trichotomized independent attribute which has ordered categories is involved, two effect parameters are computed--one for each successive pair of ordered categories instead of one overall effect parameter for the dichotomized case. The equations for the two effect parameters for a trichotomized independent attribute are identical to those for the three-attribute dichotomous case because each gradation of the ordered attribute is treated as a dichotomy acting in conjunction with two other dichotomies (Coleman, 1964, p. 215).

In addition to computing the effect of a single category change in the ordered attribute just described, Coleman provides effect parameters for polytomous attributes to answer a very important question (p. 218-219): What is the effect of the ordered variable when it is standardized to be comparable to measures of effect for dichotomized attributes? In other words, how does one compare measures of effect of different attributes independent of the number of categories? This is accomplished by assuming that the ordered attribute is dichotomized at the middle category and then determining the average number of categories separating the collapsed segments. Then by multiplying the a_i (obtained by taking the average of the a_i's for each category change) by the average number of categories separating the collapsed segments, a value comparable to the dichotomous effect estimate is obtained. Coleman has devised tests of significance for effect parameters for dichotomous independent attributes and for the effect parameter of a single category change in the ordered variable (pp. 205-210).

As noted earlier, the present investigation employs a slightly modified version of Coleman's stochastic model which was developed by Richard Boyle.[51] Boyle develops two fundamental points directly relevant to the present research.

First, he makes the important distinction between statistical techniques which deal with two different types of substantive problems--one in which the researcher makes assumptions about the direction of causality between attributes and the other he does not. For the first type of problem, statistics which provide a measure of the "effect" of an independent attribute are appropriate, and Coleman's model belongs to this class of statistics. For the second type of substantive problem, statistical techniques which provide a measure of the amount of "explanation" an independent variable provides for the dependent variable are appropriate. Two conditions distinguish between measures of "effect" and measures of "explanation": effect measures are concerned with how much larger predictions of the dependent attribute are, given the presence of the independent attribute relative to its absence, while the latter are concerned with the proportional improvement in accuracy of estimation of the dependent variable by using a given independent variable. The second distinguishing condition is that measures of explanation must take account of the marginal distribution of the sample over the independent variable, while measures of effect must not. He concludes this point by stating:

> "If the substantive theory guiding an investigation makes assertions of the form, 'a certain condition of X causes a certain condition of Y, and not vice versa,' then statistics based on effect are appropriate. This does not mean that the goal of making good predictions is ignored--it is postponed. The first task is to find statistics which interpret data according to the assumptions of an explicit substantive theory. The second task is to evaluate the validity of that interpretation." (pp. 2-3).

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[51] Boyle has explicated Coleman's model to make it more intelligible to the mathematically unsophisticated as well as corrected one of its weaknesses. The writers are deeply indebted to Professor Boyle for the discussion which follows. The two computer programs, one for the IBM 1401 and the other for the IBM 7094, which are used in the present analysis to compute effect parameters and which incorporate Boyle's modifications of the original Coleman model, were written by Nancy Karweit and James S. Coleman, respectively.

Clearly, the basic substantive proposition of the present research involves a one-way causal sequence; namely, that the school environment is partly responsible for variation in the academic behavior of students. Therefore, a statistical test which gives estimates of "effect" is appropriate.

The second basic contribution of Boyle's paper is to modify Coleman's procedure to make it more appropriate for dealing with small subsamples; that is, for developing a more effective weighting procedure to handle the crucial problem of variation in the number of cases in cells on which the proportion differences in the dependent attribute are computed. As noted above, Coleman's weighting procedure involves weighting each proportion-difference according to the inverse of the estimate of its variance. However, as Boyle (1966, p. 5) points out, this procedure is weak in that small subsamples provide poor estimates of population variances. He suggests an alternate procedure which is to compute effect estimates based on individual cases, not on subsample proportions. Thus effect parameters are obtained by computing a weighted average of separate proportion-differences (P_i-P_j), with the weighting function being $n_i n_j/n_i+n_j$. He demonstrates that this approach to the weighting problem leads to a procedure for dichotomous independent attributes which is mathematically equivalent to multiple regression analysis of dummy variables. Furthermore, this revision of Coleman's technique (Boyle, 1966, unpublished, p. 8) can be used to compute estimates of effect for polytomous independent attributes on dichotomous dependent attributes.[52] Since Tannenbaum and Bachman (1964) have shown that multiple regression is an especially useful tool in handling the problem of spurious group and individual effects in contextual analysis, Boyle's slightly modified version of Coleman's multivariate model seems well suited for the substantive problem under investigation in this study.

Finally, the appropriateness of using tests of significance for the effect parameters should be considered since the sample of schools was not randomly selected. As noted by Turner (1964, p. 22), with such a sample it is not possible to determine exactly how large a relationship must be before one can be confident that it applies to the relevant population. Thus, one could argue that tests of significance are inappropriate for the present data.

However, Turner offers a plausible reply to such an argument. It is still important to set a minimum level beneath which any observed relationship should be ignored. The level chosen for the larger study[53] is .01. With such a large sample very small effect paramters are significant far beyond this level. For this reason primary importance is attached to the magnitude of the effect parameters,not their level of significance. Nevertheless, choosing the .01 level provides a guideline for completely discounting a relationship, as well as giving the reader information to use in evaluating substantive conclusions based on the effect parameters.

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[52] For the use of this technique in a recent substantive investigation, see Boyle (1966, AJS).

[53] The "larger study" excludes the segment of the research dealing with the differential effects of school climates on the matched subsample of Negro and white students. This subsample presents special statistical problems which are discussed in detail later in the report.

Classification Scheme for Variables

As noted earlier in this chapter, in attempting to minimize the likelihood of obtaining spurious group or individual effects in the multivariate analysis employed in this type of study, it is important to use as many categories as feasible for each variable in order to increase the precision of measures. Of course, the number of cases within the categories of the variables is reduced as the number of categories is increased. Using Boyle's modified version of Coleman's multivariate technique partially alleviates this problem. Nevertheless, the researcher has to compromise the two conflicting demands of using as many categories as possible on the group and individual level variables while simultaneously maintaining as many cases as possible in all cells. In the present analysis an attempt was made to achieve the optimum number of categories on both the group or climate level measures and the individual level intervening variables.

Throughout much of the analysis, the effects of each of the six climate dimensions on various dependent attributes are determined while holding constant sex, father's education, mental aptitude, and year in school. Obviously the simultaneous introduction of five independent variables requires collapsing of categories on each of the variables. For each of the six dimensions of school climate (measured by factor scores), schools were ranked and then collapsed into quartiles.[54] Although it would have been preferable to retain each school as a separate category in the analysis, this was not feasible given the great variation in size of institutions and the necessity of controlling the effects of the four personal characteristics enumerated above. Furthermore, since one of the primary objectives of the research is to assess the impact of school climate on individual behavior and since Tannenbaum and Bachman (1964, p. 589) have shown that to minimize the likelihood of obtaining spurious group level effects it is most important to strictly control individual level characteristics, the collapsing of factor scores into quartiles is a necessity. Comparing the effects of the factor scores on the dependent variables using school quartiles as opposed to retaining each school separately revealed that the former classificatory scheme does not give appreciably different results.

Scores on the Abstract Reasoning Test were used in the following manner to classify students into four categories of mental aptitude: Quartile 1 = C-scores 0, 1, 2, 3, and 4; Quartile 2 = C-score 5; Quartile 3 = C-score 6; and Quartile 4 = C-scores 7, 8, 9, and 10.

Father's education was collapsed in the following manner to obtain a measure of the socio-economic background of students: 1 = students whose fathers were not high school graduates; 2 = students whose fathers had received the high school diploma; 3 = students whose fathers had some college; 4 = students whose fathers had received at least the bachelor's degree.

Grade in school was trichotomized, with 9th and 10th grade collapsed in one category and 11th and 12th grade retained as separate categories.

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[54] Quartile rankings of each school on the six factors are presented in Table B-7 in Appendix B.

All dependent attributes except college plans[55] were dichotomized as close as possible to the median. For mathematics performance this resulted in students having C-scores on the math test of five or higher being categorized as "high" and those with C-scores between zero and four classified as "low." Students' English grades were classified as follows: those with an average of 2.1 or greater (i.e., higher than "C") were labelled "high," and those with "C" or less average as "low." On the summated binary rating scale measuring POTI, those respondents giving "intellectual" responses to three or more of the six items were classified as "high" and all others as "low."

Table III-22 gives the marginal distributions for the six climate dimensions, the "intervening" individual variables, and the dichotomized dependent attributes based on the classification scheme just elaborated. An inspection of the table reveals that for all three types of attributes the classification scheme resulted in distributions which are roughly rectangular, which is important for maintaining as many cases as possible in cells when controlling the effects of several attributes simultaneously. The percentage of students for whom data are missing is quite small for all attributes except the AR and MATH tests. The implications of missing data on these two tests for substantive conclusions have been discussed earlier in this chapter.

To give an indication of the degree of precision of the above classification scheme as it is employed in the analysis, consider the following example, data for which are presented later in the report: measuring the effects of factor scores derived from Factor I, absence of academic emulation, on the mathematics performance of students while simultaneously controlling the effects of sex, year in school, mental aptitude, and family SES. Controlling the effects of these five attributes simultaneously, partitions the sample of students into 384 categories (4 x 2 x 3 x 4 x 4 = 384), resulting in a high degree of precision for the measurement of both the climate and individual level attributes. Furthermore, Coleman's technique will give estimates of the effect of each of the five attributes on the dichotomized dependent attribute independent of the effects of the other four, providing a powerful multivariate design.

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[55] The collapsing procedure for this attribute was described earlier in the chapter. See p. III-54 above.

TABLE III-22

PERCENTAGED DISTRIBUTIONS FOR CLIMATE LEVEL, INDIVIDUAL AND DEPENDENT ATTRIBUTES

Attributes	Frequency and Percent in Each Category				Total	Number and Percent of Total Sample for Whom Data Are Missing[a]
School Quartile Ranking on Dimensions of Climate:	Low 1	2	3	High 4		
Factor I - Absence of Academic Emulation						
Percent	26.7	21.7	21.5	30.1	100%	--
Number of Cases	(5,440)	(4,407)	(4,393)	(6,105)	(20,345)	
Factor II - Student Perception of Absence of Intell.-Esthet.						
Percent	23.6	29.7	24.0	22.7	100%	
Number of Cases	(4,809)	(6,055)	(4,880)	(4,601)	(20,345)	
Factor III - Cohesive and Egalitarian Estheticism						
Percent	27.9	19.4	28.0	24.7	100%	--
Number of Cases	(5,679)	(3,951)	(5,703)	(5,012)	(20,345)	
Factor IV - Absence of Scientism						
Percent	26.0	26.2	23.5	24.3	100%	--
Number of Cases	(5,304)	(5,335)	(4,776)	(4,930)	(20,345)	--
Factor V - Humanistic Excellence						
Percent	26.3	20.0	26.9	26.8	100%	--
Number of Cases	(5,366)	(4,071)	(5,468)	(5,440)	(20,345)	--
Factor VI - Academically Oriented Status System						
Percent	27.7	23.5	22.1	26.7	100%	--
Number of Cases	(5,644)	(4,788)	(4,491)	(5,422)	(20,345)	--
Individual Level Independent Attributes:						
Sex	F	M				
Percent	49.2	50.8			100%	--
Number of Cases	(10,001)	(10,344)			(20,345)	--

TABLE III-22 (continued)

Attributes	Frequency and Percent in Each Category				Total	Number and Percent of Total Sample for Whom Data Are Missing[a]
Ability Level (Abstract Reasoning Test Scores)	Low 1	2	3	High 4		
Percent	31.6	22.8	21.4	24.2	100%	6.1%
Number of Cases	(6,037)	(4,362)	(4,080)	(4,620)	(19,099)	(1,246)
Fathers' Education	Low 1	2	3	High 4		
Percent	27.6	26.8	15.1	30.5	100%	4.2%
Number of Cases	(5,378)	(5,221)	(2,949)	(5,938)	(19,486)	(859)
Year in School	(9 + 10)	(11)	(12)			
Percent	42.0	32.4	25.6		100%	--
Number of Cases	(8,558)	(6,598)	(5,188)		(20,345)	--
Dichotomized Dependent Attributes at Individual Level:						
College Plans	No	Yes				
Percent	41.2	58.8			100%	1.3%
Number of Cases	(8,278)	(11,808)			(20,086)	(259)
Academic Values (Personal Orientation Toward Intellectualism)	Low	High				
Percent	52.7	47.3			100%	0.9%
Number of Cases	(10,616)	(9,547)			(20,163)	(182)
English Grades	Low	High				
Percent	53.3	46.7			100%	1.4%
Number of Cases	(10,704)	(9,363)			(20,067)	(278)
Mathematics Performance	Low	High				
Percent	48.2	51.8			100%	6.1%
Number of Cases	(9,204)	(9,895)			(19,099)	(1,246)

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[a] The base for the percentages in this column is 20,345, the total number of students in the sample to whom questionnaires were administered.

Chapter IV

ZERO-ORDER CLIMATE AND INDIVIDUAL EFFECTS ON ACADEMIC BEHAVIOR OF STUDENTS

Introduction

The first objective of this chapter is to present the zero-order effects of each of the six climate dimensions on the three aspects of academic behavior. After this presentation is made, the zero-order effects of each of four-individual level attributes--ability level, sex, socio-economic background, and year-in-school--on the dependent attributes will be discussed.

The degree of relationship between each of these four individual characteristics and the dependent attributes must be determined since any zero-order effects of school climate are possibly a function of uncontrolled variation in these personal and background characteristics. Consequently, each of these four individual characteristics which has a significant relationship with the dependent attributes will be introduced subsequently as a control in the analysis of climate effects on academic behavior. It should be emphasized that all zero-order effects of climate dimensions on the dependent attributes presented in this chapter are unweighted effect estimates rather than weighted. Unweighted estimates are presented because when one weights the proportions he implicitly assumes that deviations between the actual proportions and the estimated proportions derived from the model are attributable to sampling variations. However, deviation of the observed data from the model could be attributable to the systematic effects of other factors, which means that the deviations would remain regardless of the sample size (Coleman, 1964, p. 202). When the numbers of cases on which the proportions are based are large, as they are in every instance in the tables in this chapter, the use of the unweighted technique is more appropriate. In subsequent chapters, where higher-order partialing is carried out and the size of subsamples upon which various proportions are based varies greatly, use of the weighted technique will become a necessity.

As noted in the preceding chapter, the effect estimates may be interpreted as direct estimates of averages for proportion differences in the case of dichotomous independent attributes and approximate estimates of averages for proportion differences for polytomous attributes (Boyle 1966, p. 13, unpublished).

Climate Effects on Educational Plans

Turning to the effects of the six dimensions of school climate on college plans presented in Table IV-1, it can be seen that each of them has an effect in the direction which would be expected on the basis of the substantive content of the factors.[1] Scores on the first factor are negatively and monotonically related to the dependent attribute. This relationship indicates that the more emphasis on academic performance, competitiveness, and intellectualism by both faculty and

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[1] That is, one would expect climate dimensions I, II, and IV to have negative relationships with each dependent attribute. Conversely, climate dimensions III, V, and VI would be expected to be positively related to the dependent attributes.

TABLE IV-1

PROPORTION OF STUDENTS WITH COLLEGE PLANS BY SCHOOL QUARTILE RANKINGS ON EACH OF SIX DIMENSIONS OF SCHOOL CLIMATE

Climate Dimensions	School Quartile Rankings on Factor Scores low 1	2	3	high 4	Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Factor I - Absence of Academic Emulation						
Proportion with College Plans	.706	.675	.513	.472	-.156	.01
Number of Cases	(5,403)	(4,356)	(4,319)	(6,008)		
Factor II - Absence of Intell.-Esthet.:						
Proportion with College Plans	.654	.659	.556	.458	-.130	.01
Number of Cases	(4,757)	(6,021)	(4,778)	(4,530)		
Factor III - Cohesive and Egalitarian Estheticism						
Proportion with College Plans	.514	.535	.586	.716	.135	.01
Number of Cases	(5,610)	(3,895)	(5,596)	(4,985)		
Factor IV - Absence of Scientism						
Proportion with College Plans	.673	.564	.613	.497	-.117	.01
Number of Cases	(5,258)	(5,252)	(4,710)	(4,866)		
Factor V - Humanistic Excellence						
Proportion with College Plans	.498	.562	.577	.706	.139	.01
Number of Cases	(5,294)	(4,020)	(5,369)	(5,403)		
Factor VI - Academically Oriented Status System						
Proportion with College Plans	.544	.507	.657	.647	.069	.01
Number of Cases	(5,563)	(4,732)	(4,462)	(5,329)		

students in the school environment, the larger the proportion of students planning to pursue their formal education beyond the high school level.

The second dimension of school climate, absence of intellectualism-estheticism, is only slightly less negatively related to students' plans than the first. This indicates that the more the atmosphere encourages an intrinsic value of knowledge and the more teachers are emotionally supportive of students, the greater the proportion of students with firm intentions to attend college.

The third aspect of school climate--which reflects the degree of cohesion among students, an emphasis on democratic values and intellectual standards for social recognition among students, and a commitment to knowledge of the liberal arts--is monotonically related to educational plans in a positive direction.

The negative relationship of scores on Factor IV to the dependent attribute indicates a tendency for those schools lacking a strong press toward scientism to have a smaller proportion of their students planning to enter college than those which strongly encourage excellence and achievement in this broad substantive area. However, the relationship is not monotonic, with a reversal in the proportions between the second and third quartiles.

The positive and monotonic relationship of scores on Factor V to college aspirations suggests that the greater the value placed on the humanities by teachers and students and the greater their emphasis on achievement and on an intrinsic value of knowledge, the higher the proportion of students with college aspirations.

The magnitude of effects of each of the first five dimensions on educational plans is roughly equal. However, the estimates of effect for the sixth dimension, dealing with the criteria for social recognition among students, is only approximately half that for each of the other five. Furthermore, the relationship is non-monotonic, with reversals between the first and second and third and fourth quartiles. However, overall there is a slight positive relationship between peer group rewards for intellectualism and achievement and a firm commitment to enroll in college. Explanation of the smaller effects of the sixth dimension of school milieu than the other five on educational aspirations will be postponed until Chapters V and VI which examine in detail the effects of peer-group status on the dependent variables. Suffice it to mention here that the sixth dimension also has smaller effects on both math and English achievement than do the first five dimensions of school environment.

Climate Effects on Mathematics Performance

Table IV-2 gives the relationship of the school rankings on the six factor scores to performance on the mathematics test. The first, second, and third dimensions are monotonically related to performance, while the fourth and fifth each have a single reversal across quartiles. The sixth dimension effects could best be described as curvilinear since there are two reversals over the four quartiles. However, its overall effect standardized to a dichotomy is positive. Just as is true for college aspirations, the effect of the sixth dimension on math achievement is considerably less than is the case for each of the other five dimensions.

TABLE IV-2

PROPORTION OF STUDENTS WITH HIGH SCORES ON MATHEMATICS TEST BY SCHOOL QUARTILE RANKINGS ON EACH OF SIX DIMENSIONS OF SCHOOL CLIMATE

Climate Dimensions	School Quartile Rankings on Factor Scores low 1	2	3	high 4	Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Factor I - Absence of Academic Emulation						
Proportion with High Scores	.640	.597	.447	.401	-.159	.01
Number of Cases	(5,111)	(4,215)	(4,092)	(5,681)		
Factor II - Absence of Intell.-Esthet.						
Proportion with High Scores	.601	.573	.474	.402	-.133	.01
Number of Cases	(4,580)	(5,718)	(4,564)	(4,237)		
Factor III - Cohesive and Egalitarian Estheticism						
Proportion with High Scores	.427	.486	.517	.647	.146	.01
Number of Cases	(5,319)	(3,768)	(5,301)	(4,711)		
Factor IV - Absence of Scientism						
Proportion with High Scores	.629	.486	.533	.416	-.135	.01
Number of Cases	(5,024)	(5,010)	(4,511)	(4,554)		
Factor V - Humanistic Excellence						
Proportion with High Scores	.407	.514	.507	.640	.155	.01
Number of Cases	(4,971)	(3,886)	(5,131)	(5,111)		
Factor VI - Academically Oriented Status System						
Proportion with High Scores	.492	.428	.589	.566	.050	.01
Number of Cases	(5,240)	(4,540)	(4,304)	(5,015)		

The pattern of effects for the six dimensions is quite similar to that for college plans. Each of them is related to math performance in the same direction as to college aspirations. The first five dimensions have a slightly greater effect on achievement than on aspirations; however, the magnitude of the differences is certainly negligible. On the other hand, the sixth dimension has a slightly weaker effect on math performance. The comparability of the climate effects on math achievement and college aspirations is not surprising since at both the individual and ecological levels, performance on the math test is the variable most highly correlated with college aspirations.[2]

Climate Effects on English Performance

The data in Table IV-3 indicate that measures of school milieu have _appreciably_ lower effects on English grades than those shown above for college plans and achievement in mathematics. Inspection of the six effect parameters standardized to dichotomous form reveals the relationships are in the expected direction. However, for none of the six factors is there a monotonic relationship between climate quartiles and proportion of students with higher than "C" average in English.

On _a priori_ grounds there is no reason to expect the climate effects on English performance to be systematically lower than those on math performance. A plausible explanation for this discrepancy is that English grade average is not an adequate measure of achievement in this area. Stated differently, this measure of performance is not a comparable measure of English achievement across schools. Other research has shown that grading standards and teachers' academic expectations of students vary with the predominant class background of the student clientele (Wilson, 1963).

In the present research it appears that the substantive meaning of English grades varies across schools.[3] One empirical test of this contention is to determine whether English grades and scholastic ability are correlated to the same degree as are math scores and scholastic ability. One can argue that although verbal and quantitative skills are far from perfectly correlated (either on the individual or aggregate level) it should be true that valid measures of each will be correlated to a relatively high degree with average ability level. This was the case in Project Talent (Flanagan _et al._, 1964, Table 2-7); the product-moment correlation between AR scores and performance on a comprehensive 114-item achievement test in English was only _slightly_ lower than that between AR scores and the math test employed here. However, in the present analysis the product-moment correlation between mean math score and mean ability level of schools (AR scores)

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[2] These product-moment correlations are .858 and .520, respectively.

[3] As shown in Table III-20 of the preceding chapter, the distributions of grades are not highly comparable across schools. This problem could be remedied by a standardization procedure. Yet, the original problem of variation in meaning of grades from school to school would not be obviated by this procedure: The "A" in English in a high quality school (e.g., number 04) reflects greater overall achievement in the subject than does the same grade in a school of inferior quality.

TABLE IV-3

PROPORTION OF STUDENTS WITH HIGH ENGLISH GRADES BY SCHOOL QUARTILE RANKINGS ON EACH OF SIX DIMENSIONS OF SCHOOL CLIMATE

Climate Dimensions	School Quartile Rankings on Factor Scores low 1	2	3	high 4	Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Factor I - Absence of Academic Emulation						
Proportion with High Grades	.524	.432	.409	.482	-.028	.05
Number of Cases	(5,366)	(4,362)	(4,326)	(6,013)		
Factor II - Absence of Intell.-Esthet.						
Proportion with High Grades	.477	.504	.453	.421	-.037	.01
Number of Cases	(4,784)	(5,960)	(4,815)	(4,508)		
Factor III - Cohesive and Egalitarian Estheticism						
Proportion with High Grades	.404	.530	.433	.526	.082	.01
Number of Cases	(5,623)	(3,903)	(5,598)	(4,943)		
Factor IV - Absence of Scientism						
Proportion with High Grades	.518	.402	.505	.444	-.050	.01
Number of Cases	(5,269)	(5,267)	(4,727)	(4,804)		
Factor V - Humanistic Excellence						
Proportion with High Grades	.427	.477	.440	.524	.064	.01
Number of Cases	(5,301)	(4,026)	(5,374)	(5,366)		
Factor VI - Academically Oriented Status System						
Proportion with High Grades	.467	.443	.487	.470	.002	.43
Number of Cases						

is .822, while the correlation between mean English grades and mean ability level is only .057.[4]

All of the above evidence forces the conclusion that English grade averages are not an adequate measure of performance between schools. Consequently, English grades will be deleted from the analysis in ensuing chapters as a measure of achievement when comparisons are to be made across schools.

Climate Effects on Intellectual Values

In Table IV-4 a presentation is made of climate effects on the intellectual values of individual students. For each of the six dimensions the standardized dichotomous effects are in the direction consistent with the effects on educational aspirations and performance. However, with one exception, the effects are less than half as strong for intellectual values as for college plans and math achievement. Only the effects of the sixth dimension are of roughly the same magnitude for all three dependent attributes. Furthermore, all of the relationships of the first four dimensions to intellectual values are non-monotonic. Thus, on the basis of zero-order relationships in Tables IV-1, IV-2, and IV-4 the tentative conclusion[5] must be reached that the educational and social milieu of the school is less important in its effects on students' academic values than on their educational plans and achievement.[6] An attempt to explain this finding will be postponed until late in the chapter after the relationship of personal and family background characteristics to the dependent attributes has been explored, since these individual level characteristics are also less highly associated with intellectual values than they are with college desires and performance.

Effects of Personal and Family Background Characteristics on Academic Behavior

This section summarizes the relationship of four individual level attributes--scholastic ability, father's education, year in school, and sex--to each of the dependent attributes. There is a wealth of empirical evidence available on the relationship of ability, family SES, and sex to academic performance. The relationship of each of these variables to the dependent attributes will be compared with the findings of previous research at appropriate places below.

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[4] This discrepancy also holds at the individual level. See Tables IV-6 and IV-7 below.

[5] The term tentative is used here because personal attributes of students such as ability level, sex, and family SES have not yet been controlled, which could appreciably affect the results of these three tables.

[6] This finding is consistent with Boyle's results (1966) in his study of the effect of the socio-economic context of the high school on the college aspirations of Canadian girls. Using the same statistical technique employed here, he found that the effect of the socio-economic context of the school on aspirations with family SES controlled was .25. However, its effect on intellectual occupational values (i.e., a preference for a job involving "creativity" as opposed to "security") was only .10.

TABLE IV-4

PROPORTION OF STUDENTS WITH HIGH SCORES ON PERSONAL ORIENTATION TOWARD INTELLECTUALISM SCALE BY SCHOOL QUARTILE RANKINGS ON EACH OF SIX DIMENSIONS OF SCHOOL CLIMATE

Climate Dimensions	School Quartile Rankings on Factor Scores low 1	2	3	high 4	Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Factor I - Absence of Academic Emulation						
Proportion with High Scores	.517	.475	.500	.415	-.068	.01
Number of Cases	(5,394)	(4,386)	(4,335)	(6,048)		
Factor II - Absence of Intell.-Esthet.						
Proportion with High Scores	.494	.504	.485	.400	-.063	.01
Number of Cases	(4,775)	(6,019)	(4,804)	(4,565)		
Factor III - Cohesive and Egalitarian Estheticism						
Proportion with High Scores	.442	.442	.487	.518	.051	.01
Number of Cases	(5,643)	(3,919)	(5,629)	(4,972)		
Factor IV - Absence of Scientism						
Proportion with High Scores	.499	.510	.454	.425	-.049	.01
Number of Cases	(5,260)	(5,275)	(4,740)	(4,888)		
Factor V - Humanistic Excellence						
Proportion with High Scores	.419	.470	.486	.517	.065	.01
Number of Cases	(5,328)	(4,045)	(5,396)	(5,394)		
Factor VI - Academically Oriented Status System						
Proportion with High Scores	.434	.440	.511	.513	.053	.01
Number of Cases	(5,601)	(4,756)	(4,469)	(5,337)		

a. Effect of Individual Attributes on Educational Plans

Ability level, family SES (as measured by father's education) and grade in school are all positively and monotonically associated with educational aspirations, as shown in Table IV-5. Also, a slightly higher percentage of boys than girls plan to enroll. The results indicate that family SES is the best predictor with ability almost as strongly related. Of course, if actual attendance were the dependent variable the effect of ability might be greater than family SES since some respondents are undoubtedly unrealistic or overly optimistic about enrolling. However, the results are consistent with those of Michael (1961, p. 594) in his analysis of a nationally representative sample of seniors in 500 public high schools in 1955 by the Educational Testing Service. He found that the student's socio-economic background exerted a slightly greater influence than his ability level.

The slightly higher proportion of upperclassmen having firm college intentions can be plausibly explained by two factors--school dropouts and the increased salience of a college education for the remaining students as they progress through high school. Most school dropouts occur before the senior year,[7] and they come in disproportionate numbers from lower socio-economic backgrounds and have lower aptitude and achievement levels. Secondly, as students move through their high school careers they increasingly come to realize the importance of the college degree for a desirable occupation and thus high prestige in American society.

Finally, the discovery that a slightly larger proportion of males have college plans is not at all surprising. A larger number of studies are cited by Beezer and Hjelm (1961, p. 7) and Sewell (1964, pp. 24-25) which clearly indicate that boys are more likely than girls to have college plans and also to attend college. This would appear to be explicable in terms of the greater importance of a college education for preparing boys for a desirable occupation (McDill and Coleman, 1963, p. 917).

b. Effect of Individual Attributes on Mathematics Performance

The data for these effects are given in Table IV-6. Here the relative magnitude of effects of ability and father's education are the opposite of those for educational aspirations, with the former accounting for a larger proportion of variation. The high degree of association between ability and math performance is consistent with the findings of numerous studies which demonstrate the considerable predictive power of intellective factors for performance.[8]

Of course, the substantial effect of family SES on math achievement is not surprising since it is the social background factor which has been shown to be

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[7] Note that the increase in college plans is greater between the 11th and 12th grades than between 9th-10th and 11th.

[8] An excellent summary of research in this area is found in Lavin (1965, Chapter 4), who notes that the correlation is higher at the high school level than at the college level which he explains in terms of the restricted range of ability at the college level.

TABLE IV-5

PROPORTION OF STUDENTS WITH COLLEGE PLANS BY EACH OF FOUR INDIVIDUAL ATTRIBUTES: ABILITY LEVEL, FATHER'S EDUCATION, YEAR IN SCHOOL, AND SEX

Individual Attributes	Categories for Individual Attributes				Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Ability Level (AR Scores)	low 1	2	3	high 4		
Proportion with College Plans	.418	.602	.663	.754	.223	.01
Number of Cases	(5,927)	(4,314)	(4,035)	(4,586)		
Father's Education	low 1	2	3	high 4		
Proportion with College Plans	.386	.553	.685	.788	.268	.01
Number of Cases	(5,295)	(5,160)	(2,922)	(5,891)		
Year in School	9 + 10	11	12			
Proportion with College Plans	.563	.585	.633		.047	.01
Number of Cases	(8,429)	(6,526)	(5,130)			
Sex	F	M				
Proportion with College Plans	.573	.603			.030	.01
Number of Cases	(9,935)	(10,150)				

TABLE IV-6

PROPORTION OF STUDENTS WITH HIGH SCORES ON MATHEMATICS TEST BY EACH OF FOUR INDIVIDUAL ATTRIBUTES: ABILITY LEVEL, FATHER'S EDUCATION, YEAR IN SCHOOL, AND SEX

Individual Attributes	Categories for Individual Attributes				Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Ability Level (AR Scores)	low 1	2	3	high 4		
Proportion with High Scores	.253	.516	.618	.778	.350	.01
Number of Cases	(6,037)	(4,362)	(4,080)	(4,620)		
Father's Education	low 1	2	3	high 4		
Proportion with High Scores	.369	.473	.590	.685	.211	.01
Number of Cases	(5,018)	(4,909)	(2,769)	(5,603)		
Year in School	9 + 10	11	12			
Proportion with High Scores	.486	.549	.533		.031	.01
Number of Cases	(8,079)	(6,169)	(4,851)			
Sex	F	M				
Proportion with High Scores	.496	.540			.044	.01
Number of Cases	(9,356)	(9,743)				

most consistently related to academic performance. As noted by Lavin (1965, p. 123), SES is a summarizing variable; that is, it symbolizes a host of values and motivations which are associated with achievement. Based on his review of the literature Lavin posits two major factors which SES summarizes: intelligence and the "achievement syndrome". The relationship of intelligence to family background is too well known to require elaboration here. However, since the literature reveals that the relationship between SES and performance does not disappear when IQ is controlled, it is evident SES summarizes other important factors. Two of the more well documented of these are achievement motivation and achievement values (Lavin, 1965, p. 125). An abundance of carefully conducted research in recent years has consistently shown that SES is related to these two factors. Much of this evidence is based on studies of child-rearing practices among various social strata which demonstrate that middle-class parents are more likely to inculcate in their children high educational aspirations and values and the "achievement syndrome" than are working- and lower-class parents.

The slight positive relationship of year in school to math performance and the fact that males have higher scores than females is attributable to the concentration or "bunching" of students' scores on the test which rendered infeasible a perfect standardization of test scores by grade and sex using the C-scale system.[9] However, these inadequacies are compensated for by controlling sex and year in school in those parts of the analysis where the two variables are relevant.

c. Effect of Individual Attributes on English Grades

A comparison of the effects of ability level and family SES on students' average English grades presented in Table IV-7 with their effects on mathematics performance reveals that the two individual attributes account for considerably less variation in the former than in the latter. This difference adds further corroboration to the point emphasized earlier that English performance does not have the same substantive meaning in different schools. The degree of relationship of ability level and SES to English performance for all schools combined is undoubtedly explained by the consistent effects within schools of each of these factors. That is, even though English grades are not a reliable measure of achievement between schools, they represent a fairly consistent measure of achievement within institutions, and students with higher mental aptitude and from families where achievement is more highly valued and intellectual skills are more systematically inculcated in children achieve at higher levels than their less able and less intellectually sophisticated counterparts.

There is a positive and monotonic effect of grade in school on achievement in English just as for college plans. The explanation here would seem to be attributable to the same two factors as for college plans discussed in section a. above; namely, dropouts and the increased importance of high grades for upperclassmen in order to be admitted to college.

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[9] See pp. 50-51 of Chapter III for a discussion of this problem.

TABLE IV-7

PROPORTION OF STUDENTS WITH HIGH ENGLISH GRADES BY EACH OF FOUR INDIVIDUAL ATTRIBUTES: ABILITY LEVEL, FATHER'S EDUCATION, YEAR IN SCHOOL, AND SEX

Individual Attributes	Categories for Individual Attributes				Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
	low 1	2	3	high 4		
Ability Level (AR Scores)						
Proportion with High Grades	.295	.437	.557	.654	.239	.01
Number of Cases	(5,934)	(4,321)	(4,051)	(4,588)		
	low 1	2	3	high 4		
Father's Education						
Proportion with High Grades	.368	.438	.517	.584	.144	.01
Number of Cases	(5,296)	(5,163)	(2,917)	(5,859)		
	9 + 10	11	12			
Year in School						
Proportion with High Grades	.413	.489	.526		.075	.01
Number of Cases	(8,394)	(6,551)	(5,122)			
	F	M				
Sex						
Proportion with High Grades	.567	.369			-.198	.01
Number of Cases	(9,895)	(10,172)				

In contrast with the effect of sex on math performance,[10] girls have substantially higher English grades. This finding is consistent with a number of studies cited by Lavin (1965, p. 129) which demonstrate that females have higher academic performance than males.[11] Furthermore, Lavin concludes that the performance of females is more consistent with their ability than is true for males; that is, the correlation between IQ and achievement is higher for girls than for boys. The most plausible interpretation of sex differences in academic performance is found in the qualitatively different socialization process for the two sexes. These differences result in more conforming behavior, attitudes, and values on the part of girls; and high academic performance is an example of conforming behavior in terms of adult norms in American society. Thus, girls have higher achievement in schools because of higher motivation and better study habits.[12]

Finally, these sex differences in English performance are consistent with those found on the comprehensive English achievement test in Project Talent: Girls scored systematically higher than boys in this subject as well as on all other tests that are measures of language skill (Flanagan, et al., 1964, p. 3-2). This was explained by girls having higher interest in languages just as was the higher performance of boys in mathematics accounted for by a greater interest and curiosity in this area.

d. Effect of Individual Attributes on Personal Orientation Toward Intellectualism

Table IV-8 indicates that there is a positive and monotonic effect of ability, family SES, and year in school on students' intellectual values.[13] However, the effect of each of these three personal characteristics on this attribute is considerably less than for any of the other three dependent attributes discussed earlier in this chapter--college plans, math achievement, and performance in English. For example, the effect of scholastic ability is less than one-third as great on intellectual values as it is on math performance and less than one-half as great on intellectual values as on educational plans and English grades. It should be remembered that a similar pattern emerged for the zero-order effects of different dimensions of school climate on intellectual orientations in comparison with climate effects on college plans and math achievement. Thus,

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[10] See pp. 49-50 of Chapter III and Tables B-5 and B-6 of Appendix B for sex differences in performance on the math test.

[11] It should be emphasized that girls have higher grade averages in school, not necessarily higher performance on standardized tests. As shown throughout Project Talent, which sex has higher performance on achievement tests depends on the subject matter.

[12] For example, in the present study, 43 percent of the girls report that they spend an average of two or more hours per day on homework outside of school, while this is true for only 26 percent of the boys.

[13] On the other hand, a noticeably higher proportion of girls than boys have high intellectual orientations. This finding will be discussed in the following chapter.

TABLE IV-8

PROPORTION OF STUDENTS WITH HIGH SCORES ON PERSONAL ORIENTATION TOWARD INTELLECTUALISM SCALE BY EACH OF FOUR INDIVIDUAL ATTRIBUTES: ABILITY LEVEL, FATHER'S EDUCATION, YEAR IN SCHOOL, AND SEX

Individual Attributes	Categories for Individual Attributes				Unweighted Estimates of Effect Standardized to Dichotomous Form	Level of Significance
Ability Level (AR Scores)	low 1	2	3	high 4		
Proportion with High Scores	.410	.453	.502	.562	.101	.01
Number of Cases	(5,950)	(4,334)	(4,050)	(4,602)		
Father's Education	low 1	2	3	high 4		
Proportion with High Scores	.418	.454	.497	.538	.080	.01
Number of Cases	(5,339)	(5,182)	(2,926)	(5,894)		
Year in School	9 + 10	11	12			
Proportion with High Scores	.468	.472	.485		.011	.09
Number of Cases	(8,476)	(6,548)	(5,138)			
Sex	F	M				
Proportion with High Scores	.509	.439			-.070	.01
Number of Cases	(9,947)	(10,216)				

indicators of two different yet overlapping classes of environmental factors are of less consequence in explaining variation in academic values than in academic performance and college intentions. One of these classes of factors is the immediate environment of the school which is tapped primarily by the various climate dimensions but also partly by year in school (duration of socialization by the school) and ability level. The other class of factors--measured most directly by family SES but partly by sex, grade in school (which measures age and thus length of exposure to family influences as well as social maturity), and ability level (which also is partly a function of family socialization)--is the background environment of the student.

The limited explanatory power of the above two classes of environmental factors on intellectualism in comparison with that on college plans and achievement can profitably be examined by introducing the concept salience. The argument is offered that intellectualism for high school students is less salient than either academic achievement or college plans[14] and that one of the important determinants of the salience of an object is its milieu or environment.

As noted by Herman and Schild (1960, p. 218), for a given milieu a certain pattern of behavior is perceived by the individual as more appropriate than any other pattern, and environments influence the salience of behavior alternatives. Thus, the concept of salience is viewed by them as being of crucial importance in analyzing the influence of a background situation on behavior. They offer evidence from their study of ethnic role conflicts among American-Jewish students studying in Israel. Their objective was to isolate determinants of the relative strength of different roles--American, Jewish, or Israeli--in social situations where two or more roles were called for simultaneously; that is, in role conflict situations. They showed that the relative strength or potency of dissonant roles was partly a function of their salience, and that one of the critical determinants of salience was interaction with relevant others in the environment.

Ennis (1962) in a study of the effects of the political environment or "climate of opinion" on the voting behavior of constituents in two adjacent congressional districts of Minneapolis in 1950 has also shown the importance of the salience of political issues on the decision processes of individual voters. In the congressional district where the Democratic candidate was elected, he built his campaign around a domestic issue while in the adjacent district the Republican incumbent, who was reelected, stressed an aspect of foreign policy as the critical issue. (Each of the candidates was seeking election in a district where his party was in the majority.) The two districts developed separate climate issues which formed the basis of winning candidates' campaigns.

Ennis' analysis of the election reveals that the minority party in each district suffered a decrease of its early strength. Between the two districts there was very little difference in the extent to which the voters supported their party's position on the two political issues. In other words, voters' opinions could not be used to satisfactorily explain the minority party's loss of strength as the campaigns progressed. However, the salience of the two issues differed appreciably for the voters in each district (p. 203). This meant that the winning candidate in each case was able to define the issue on which he wanted to campaign and thus bolster his own candidacy by getting members of the minority party to accept his party's definition of the critical issue. Thus, the political context or climate of a voting district had little effect on the attitudes, values, and opinions relating to two political issues; yet, the environment did significantly affect the voting behavior of individuals by increasing the salience of the particular issue around which the successful candidate developed his campaign.

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[14] Following Herman and Schild (1960, p. 216), salience is defined as the relative prominence of a phenomenon in the cognitive or perceptual field. Stated in more mundane terms, it may be viewed as the amount of attention paid to an object or phenomenon.

Ennis' results appear consistent with those under consideration in this analysis; namely, school context and family background have less effect on students' academic values than on their performance and educational plans.

To return to the present analysis: There is a great deal of evidence from numerous studies of American society, both historical and contemporary, that intellectualism is not strongly emphasized in either the larger society or educational institutions. In fact, numerous writers have stressed the anti-intellectualism of American society. Corwin (1965, pp. 118-120) cites Hofstader's documentation (1963) of the anti-intellectual ethos of American society from its founding days to the present. Hofstader argues, supported by some rather convincing anecedotal evidence, that anti-intellectualism is also firmly entrenched in the American public-school system.

Corwin concludes from Coleman's work, The Adolescent Society (1961), that it is an unusual school where the most studious are student leaders. There is also evidence available in the present analysis which relates to this point. Teachers were asked the following question: "If you could see any one of three boys elected president of the senior class, who would you rather it be?" Their percentaged responses are as follows:

a brilliant student	--	29.0%
an athletic star	--	2.8%
a leader in extra-curricular activities	--	68.2%
		(N=1,012)

These results are consistent with a point implicit throughout this discussion and one made explicit by many observers of the American educational enterprise: A great many of its professionals and student clients do not intrinsically value knowledge, that is, do not value education as an end in itself. Instead, many students who are high achievers and who seek to attend college do so primarily because of their desire for occupational success (vocational orientation) and the material benefits and prestige accruing to those who attain such success (status orientation). These orientations are to a considerable extent a function of the immediate school environment and the background environment of the student, both of which stress achievement and the importance of higher education more than intellectualism, and thus the latter phenomenon is less salient for high school students.[15]

The contention that a college education is valued more for vocational reasons than for intellectual, liberal arts, or basic education reasons is supported by the data in Table IV-9 which contains responses from the students with

TABLE IV-9

RESPONSES OF STUDENTS WITH COLLEGE PLANS TO A SERIES OF ITEMS ABOUT THE MAIN PURPOSES OF A COLLEGE EDUCATION

Item	Percent of Students Ranking Each Item as Highly Important
Provide Vocational Training	74.9
Develop Abilities to Get Along with Different People	58.8
Develop Knowledge and Interests in Community, National and World Problems	51.9
Develop Morals and Values	47.5
Prepare for a Happy Marriage and Family Life	35.4
Develop Skills Which Will Help Earn a High Income	63.4
Develop Understanding of Principles of Science	30.2
Develop Understanding of Principles of Human Behavior	48.0
Develop Understanding of Philosophy, Art, Literature and Music	32.8
Provide Social and Athletic Activities	22.4

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[15] A similar state of affairs appears to exist at the college level, as cogently expressed by Bay (1961, p. 994): "Even if most instructors had the incentives and the ability to make most courses stimulating, both the social pressures of the student community and the academic pressure toward competing for grades are, as we have seen, likely to discourage a concentration on intellectual

definite college plans to a series of items tapping their views on the "main purposes" of a college education.[16] Three-fourths of them attach high importance to the vocational skills which college provides, but only one-third view the acquisition of knowledge of the humanities and arts as highly important. Furthermore, almost 64 percent feel that high importance should be given to developing skills in college which will enable one to earn a high income, whereas only 30 percent attach high importance to understanding science and 48 percent to the acquisition of knowledge about human behavior. Students with college plans also were asked which of the purposes listed in Table IV-9 was most important to them, and the goal of vocational training was chosen almost twice as frequently as any other item in the list.[17]

One final piece of evidence on the lower salience of intellectualism than achievement (which is extrinsically valued by adolescents) is found in Table IV-10.

TABLE IV-10

COLLEGIATE ORIENTATIONS OF SENIOR STUDENTS WITH COLLEGE PLANS

Collegiate Orientations	Percent Choosing Each Alternative As: First Choice	Second Choice	Third Choice	Number of Cases
Be a Leader in Campus Activities	23.3	41.7	35.0	(3022)
Complete a Significant Piece of Publishable Research	16.7	31.2	52.1	(3022)
Maintain an "A" Average Throughout College Career	60.9	26.6	12.5	(3022)

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pursuits in most students. Days or even weekends devoted to reflection, serious extracurricular readings, or participation in nonrequired task-oriented discussion groups are either unknown or are rare events in the lives of most students. Such activities are indulged in by a few, however, who are undaunted by or whose energies are not exhausted by demands for social acceptance and for grades. But those few appear to be primarily those who plan a life-long pursuit of learning inside the ivied walls, not those who aim at nonacademic careers."

[16] See items 328-338 of the student questionnaire.

[17] These results are not presented in tabular form. They are based on responses to item 338 of the student questionnaire. The findings are consistent with results from national surveys of parents about the reasons they desire a college education for their children which are cited by Corwin (1965, p. 117).

These results, which are for the seniors in all high schools with definite college plans, are based on responses to three items which they were asked to rank according to importance of accomplishment during their college years (see items 368-370 of student questionnaire).[18] The difference in salience of each of the three phenomena is striking. The first choice is high grades, with scholarly accomplishment (in which intellectualism is implicit) a poor third choice. That these students are more oriented to academic performance than to extra-curricular leadership and campus prestige, however, is evidenced by the fact that almost 37 percent more of them rank the former as most important. However, the high ranking assigned to grades would appear to be a function of the importance these high school seniors attach to the vocational advantages of a college education, not to personal values in which knowledge is desired as an end in itself.

Of course it would be highly unrealistic to expect even a majority of college students to be intellectuals, to say nothing of high school students. However, as Corwin notes (p. 118-119), despite the fact that there are everincreasing proportions of high-school-aged youth in school and high school graduates enrolling in college, the loss of talent at both the high school and college levels is too great to keep up with the demands of an economy that is constantly increasing in size and complexity. This loss of talent can be accounted for partly by the lack of stress upon intellectualism in our educated economy.

As the above discussion and data have indicated, the external rewards which students see accruing from occupational success are effective motivational factors; however, it is important to note Corwin's point (1965, p. 117) that they are "poor substitutes for a personal value system in which education has an important place." This argument seems especially compelling when one realizes that intellectually committed youth are constantly needed to maintain and increase the supply of trained persons who are the educational and scientific entrepreneurs of modern society (Thistlethwaite, 1963, p. 2).

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[18] These three alternatives were developed by Jerome Kirk of Carnegie Tech, Edward McDill, and James Coleman when questionnaires for this study and Kirk's study of Carnegie Tech undergraduates were being developed. For the responses of Carnegie Tech freshmen to a slightly different format see Table 6 of Kirk's publication (1965, p. 85). His results show a much higher percentage of students choosing scholarly achievement than is the case for the college-aspiring seniors in the present sample. Unpublished results based upon longitudinal data obtained by McDill from Johns Hopkins freshmen are consistent with Kirk's findings. Although Carnegie Tech and Hopkins freshmen are clearly more selective in terms of ability, motivation, and SES background than the high school seniors with college plans in the present sample, the discrepancy among these three alternatives for the college and high school students is too great to be explained solely by these factors. Furthermore, the two-wave panel analysis of Hopkins freshmen, based upon data obtained at the beginning and end of their first year in college, indicated an increased emphasis on scholarly publications at the expense of a decreased aspiration for high grades. These results suggest that when college students are placed in an intellectual environment their intellectual values change in a direction consistent with the "press" or characteristic features of the environment. That is, intellectualism becomes salient for students when the institutional atmosphere stresses its importance.

That intellectual commitment makes an important contribution to achievement and educational aspirations in its own right is evident in the results of Table IV-11. These results indicate a significant motivational effect of intellectualism on math achievement, English grades, and college plans independent of ability level and family SES; and they strongly suggest that if school and home environments and the larger society made intellectualism more salient for students, then the loss of talent in American schools could be appreciably reduced.

TABLE IV-11

EFFECT OF PERSONAL ORIENTATION TOWARD INTELLECTUALISM ON ACHIEVEMENT AND COLLEGE PLANS

Independent Attribute	Dependent Attribute	Control Attributes	Estimates of Effect	Level of Significance
POTI	Math Performance	Ability Level and Father's Education	.137	.01
POTI	English Grades	Ability Level and Father's Education	.206	.01
POTI	College Plans	Ability Level and Father's Education	.191	.01

Summary

In this chapter a presentation was made of the zero-order effects of (1) the six dimensions of school environment and (2) personal and family background characteristics on the college plans, mathematics achievement, English grades, and intellectual orientations of individual students.

It was shown that the magnitude of effects of the six climate dimensions on the first two dependent attributes are roughly equal, lowest for grade point average in English, and second lowest for intellectual values. The small effects of climate dimensions on English performance were attributed to the inadequacy of grade-point average in English as a measure of achievement between schools. That is, students' grades in English are not comparable from school to school. The weaker relationship of the environmental dimensions to intellectual values than to educational plans and math achievement was explained in terms of the lower salience of intellectualism than college attendance and achievement for high school students.

The four personal and background attributes--scholastic ability, father's education, grade in school, and sex--were found to be related to the dependent attributes in a manner consistent with the findings of earlier research. Of these four individual characteristics, scholastic ability has the strongest relationship (with one minor exception) to the four measures of academic behavior with father's education being the second most important predictor. Furthermore, both of these personal attributes are more highly associated with the four dependent attributes than are the six dimensions of school climate. These findings make it necessary to reexamine the effects of the climate dimensions on college plans, math performance, and intellectual values with scholastic ability, father's education, sex, and year in school simultaneously controlled since the effects shown in Tables IV-1, IV-2, and IV-4 could possibly be explained by systematic uncontrolled differences in these characteristics among the student bodies of the various schools. This is the purpose of the following chapter.

Chapter V

CLIMATE EFFECTS ON ACADEMIC BEHAVIOR WITH PERSONAL AND FAMILY BACKGROUND CHARACTERISTICS CONTROLLED

Introduction

In Chapter IV it was shown that each of the six dimensions of school climate has effects in the expected direction on college plans, math achievement, and intellectual orientations of individual students. However, it was emphasized in that chapter, as well as earlier in the report, that to demonstrate contextual effects on the behavior of individuals actually exist, one has to separate the consequences of the social conditions of the school from those of the individual's own characteristics for his behavior (Blau, 1960, p. 179). That is, one has to measure the impact of the school environment on various measures of student behavior with student input factors such as family SES, scholastic ability, grade in school, and sex controlled. This is the primary task of this chapter. A second and related task is to assess the total amount of variation in the three dependent attributes which can be explained by the school, personal, and family background factors.

Climate Effects on College Plans

Table V-1 gives the effects of each of the six climate dimensions on college plans with father's education, scholastic ability, year in school, and sex held constant. Since the partialed tables on which these results are based involve 384 categories, it is obviously necessary to present the effect estimates in summary form.

The table shows the unique or independent contribution of each of the four individual attributes to variation in educational plans, and also presents the total amount of variation explained by each of the climate dimensions in conjunction with the four personal attributes.

The most important finding in the table is that each of the six dimensions retains part of its original explanatory power shown in Table IV-1. The proportional reduction in the explanatory power of the dimensions (obtained by comparing the effect parameters of Table V-1 with the zero-order effect parameters of IV-1) varies from .362 for Factor II to .778 for Factor IV. That is, the second dimension retains the largest proportion of its zero-order effect while the fourth dimension retains the least. Furthermore, the effect estimate for Factor IV, Absence of Scientism, is not statistically significant when the relevant personal attributes are controlled.

There are two explanations for the considerable reduction in proportion of variation explained by this dimension from -.117 at the zero-order level to -.026. First, it is highly possible that the items used in the faculty and student presses for scientism (which are the most important variables in this scale) are inadequate measures of the degree of scientific emphasis in the

TABLE V-1

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON COLLEGE PLANS WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, YEAR IN SCHOOL, AND SEX SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Ability	Weighted Effect Estimates of Year in School[b]	Weighted Effect Estimates of Sex[c]	Total Explained Variation[e]
I	Absence of Academic Emulation	-.076	.213	.176	.045	.029	.539
II	Absence of Intell.-Estheticism	-.083	.223	.180	.048	.032	.566
III	Cohesive and Egalitarian Estheticism	.050	.226	.181	.050	.030	.537
IV	Absence of Scientism	-.026[d]	.231	.184	.047	.032	.520
V	Humanistic Excellence	.060	.226	.181	.048	.030	.545
VI	Academically Oriented Status System	.035	.223	.181	.035	.032	.506

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Plus signs for the effect estimates in this column indicate that upperclassmen are more likely to have college plans than are underclassmen.

[c] Plus signs for the effect estimates in this column indicate that boys are more likely to have college plans than are girls.

[d] Significant at the .05 level.

[e] The total explained variation in the dependent attribute is obtained by summing the absolute values for the five independent attributes in each row.

schools.[1] However, this explanation doesn't appear plausible because, as Table V-3 shows, the relationship of Factor IV to math performance remains statistically significant when the four personal attributes are controlled. This suggests a second explanation: The degree of scientific ferment in the school is not an important facet of the school environment in motivating students to attend college. Stated differently, most students are not motivated to attend college for the purpose of pursuing a career in science. Two pieces of evidence to support this interpretation may be offered. First, as inspection of Table IV-9 shows, the students with definite college plans do not attach high importance to understanding science relative to other purposes of a college education. Secondly, only 12.4 percent of the students with definite college intentions plan to take a science program in college.[2]

The second important set of results in the table has to do with the unique contribution of each of the four personal attributes to predicting students' college plans. Each of the four is significantly related to the dependent attribute with all others held constant. A comparison of these effect estimates with the comparable zero-order parameters in Table IV-5 shows that both sex and grade have relationships of roughly the same magnitude as originally obtained. Stated differently, regardless of the quality of the school environment, boys and upperclassmen are more likely to have crystallized college intentions than are girls and underclassmen.[3] The zero-order effects of father's education and scholastic ability are each slightly reduced, with the former retaining a larger proportion of its explanatory power. The reduction of each is accounted for by their interrelationship.[4] Just as is true at the zero-order level, the effect of family background on college aspirations is greater than that of ability level. This finding is consistent with earlier research cited in the previous chapter. It offers further evidence that college attendance is heavily influenced by social class background and corroborates the conclusion reached by Sibley (1942, p. 330) twenty-five years ago that intelligence of the individual was more important than family SES in determining whether a student would finish high school but that the opposite was true regarding the likelihood of attending college.

Finally, Table V-1 indicates that each of the climate dimensions in conjunction with the four individual level attributes explains approximately one-half of the variation in educational plans.[5] The fact that approximately 50 percent of the variation in educational plans is unaccounted for by these factors is partly attributable to uncontrolled variation of a number of relevant family factors.[6] Although father's education is probably the most important measure summarizing the influence of family background on educational plans, it certainly fails to adequately measure a number of aspects of family influences on the child's educational aspirations such as parents' mobility orientations and educational values (Kahl, 1953), child rearing practices, family size, and role structure.

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[1] In this connection it should be noted that Thistlethwaite (1963) eliminated scientism scales from his study of the recruitment of talented college youth because of their low validity and reliability. In reading the literature one is left with the impression that scientism is a conceptual area for which adequate measures have been difficult to develop.

[2] This figure is based on the percentaged responses to Question 309 of the student questionnaire in Appendix A.

[3] Ability and father's education are ignored in this conclusion for an obvious reason: there is no plausible reason to expect sex and year in school to be affected by family background and ability level.

[4] The effect of father's education on AR performance is .118.

A second set of uncontrolled influences which should be important in accounting for variation in students' college plans are those of the immediate friendship or peer group.[7] In a recent highly original work, Campbell and Alexander (1965) have postulated and empirically tested a two-step model to account for the structural effects of high schools on the college aspirations of adolescents. They argue that sophisticated analyses of structural effects should move from the characteristics of a given social milieu to the situation faced by the individual (i.e., his immediate interpersonal influences such as friendship cliques or peer groups): "We must keep in mind the fact that the actor responds to that segment of the total social system which, for him, is perceptually important and salient; rarely does he (inter-) act with reference to the system as a whole" (p. 284).

The model they employ to account for the influence of the immediate peer group on the college plans of the student is based on balance theory: "(1) The greater the attraction of a person, P, to another, O, the more likely he is to be similar to O with respect to X--where X represents those values, behaviors, and attitudes that are perceived to be of importance and common relevance. (2) The greater the similarity of a person, P, to another, O, with regard to X, the more likely he is to come to be highly attracted to O" (p. 285).

With respect to interpersonal influences on college plans, the model leads to the simple prediction that (1) it is highly probable a student's college plans will be similar to those of his close associates and (2) the more firm his plans to attend college, the more likely he is to closely associate with other students who share his desires and values on this topic.[8]

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[5] In their recent study of the college plans of high school seniors in Milwaukee, Sewell and Armer (1966) were able to explain approximately 25 percent of the variance (not variation) by simultaneously controlling sex, I.Q., socio-economic background, and neighborhood socio-economic context.

[6] Of course one important factor is not controlled in the table--the student's personal orientation toward intellectualism. This variable will be introduced later in the chapter.

[7] For extensive reviews of peer group influences on adolescents' college plans see Haller and Butterworth (1960) and McDill and Coleman (1963).

Taking as points of departure studies showing (1) contextual effects of high schools on individuals' college plans such as that by Wilson (1959) and (2) the more immediate social-psychological effects of the educational aspirations of friends on students' college intentions (Simpson, 1962), Campbell and Alexander predicted that the observed association between the average socio-economic status of high schools and individual students' college plans would be interpreted (Hyman, 1955, Chapters VI and VII) by holding constant the average socio-economic status of students' friends. Stated differently, they predicted that the association between the average socio-economic status of a school and the college plans of its students could be accounted for by the intervening variable "interpersonal influence" (measured by the average educational level of the parents of other students chosen by the respondent as close friends). In support of their hypothesis they found (for a sample of North Carolina high school seniors) the relationship between the average socio-economic status of the school and students' college plans virtually disappeared at each level of parents' education when the effect of the socio-economic status of friends was controlled. On the other hand, when the average socio-economic status of the school was held constant, the relationship between college plans and friends' status was reduced only a negligible amount at each level of parents' education. Thus, they concluded that the structural effects of school status on college plans are mediated by the interpersonal influences of other students in his immediate environment. Stated differently, they concluded that an important interpretive link between the larger social collectivity (as represented by the school) and the educational orientation of the individual student is the influence of his immediate peer group.

Campbell and Alexander have taken an important step toward integrating social-psychological theory and structural theory, thus providing a more general explanation of how students derive their educational values from a given social milieu. Their findings point up the importance of introducing into the present analysis a measure of proximal interpersonal influences on students' college plans. The direct indicators of the normative influence of school climate and educational plans of respondents' friends available here provide a more rigorous test of Campbell's and Alexander's theory than the indirect measures of these two concepts they employed--the average socio-economic status of the school and of friends.[9]

The measure of friends' interpersonal influence on the college plans of students utilized here is based on responses to Question 275 of the student questionnaire: "Of the people your own age with whom you spend most of your free time, how many plan to go to college or are already going to college?" All respondents answering "most" or "all" were classified for purposes of analysis as being subjected to strong interpersonal influences to attend college.

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[8] For a similar explanation of peer influences on college plans using longitudinal data, see McDill and Coleman (1963).

[9] In this connection it is important to note that Sewell and Armer (1966), in a recent study of the college plans of high school seniors, seriously question the adequacy of the socio-economic context of the neighborhood or school as an indicator of the normative influence of institutional environments on students' educational plans. This issue will be discussed in detail in a later chapter.

Table V-2 shows the independent contributions of each of the climate dimensions, ability, father's education, friends' influence, and year in school to variation in college plans.[10]

Two very important findings are evident in this table. First, the proportion of friends the respondent has either planning to attend college or already enrolled exerts a powerful independent effect on his decision. In fact, this variable has the strongest effect of any independent attribute on any of the dependent attributes considered in this study. Secondly, and more important, controlling friends' influence results in the virtual disappearance of the effects of five of the six climate dimensions, with the effect of the remaining one (Factor II) being drastically reduced from that shown in Table V-1. This finding lends strong support to Campbell's and Alexander's inference that the contextual effects of the global environment of the school on students' college plans are mediated or interpreted by the intervening influences of significant others in their immediate environment, and underlines the importance they attach to specifying the conditions under which individuals respond to specific aspects of the institutional milieu. Stated differently, with respect to making a decision as to whether to attend college, the present data support Campbell's and Alexander's conclusion that there is no direct causal link between students' educational plans and the characteristics of the total collectivity (i.e., the global dimensions of the educational and social climate of the school). However, whether this conclusion can be generalized to other school related behaviors--specifically, academic achievement--is a problem which will be examined in the next section.

Climate Effects on Mathematics Achievement

The data for assessing the effects of the climate dimensions on math achievement with the four individual attributes simultaneously controlled are shown in Table V-3. Five of the six factors retain their significant effects on achievement, and each of the five is slightly more strongly related to math scores than to college plans.

In contrast to the results in Table V-1, for college plans, the fourth dimension, measuring scientism, retains part of its original explanatory power and is statistically significant, whereas the effect parameter for the sixth factor has almost totally disappeared. These discrepancies merit some discussion.

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[10] The reader will notice that sex has not been controlled in this table. This is because of restrictions on the total number of categories across all independent attributes in the computer program utilized in the analysis. The inclusion of sex as a sixth independent attribute would have exceeded the capacity of the program. It was eliminated because, as shown in Table V-1, it accounts for the smallest proportion of variation in college plans.

TABLE V-2

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON COLLEGE PLANS WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, YEAR IN SCHOOL, AND FRIENDS' INFLUENCE SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Ability	Weighted Effect Estimates of Year in School[b]	Weighted Effect Estimates of Friends' Influence	Total Explained Variation[d]
I	Absence of Academic Emulation	-.019[c]	.127	.119	.021	.415	.701
II	Absence of Intell.-Estheticism	-.033	.132	.120	.024	.423	.732
III	Cohesive and Egalitarian Estheticism	.007[c]	.137	.121	.025	.422	.712
IV	Absence of Scientism	-.016[c]	.139	.122	.021	.430	.728
V	Humanistic Excellence	.013[c]	.135	.121	.025	.423	.717
VI	Academically Oriented Status System	.018[c]	.130	.120	.022	.426	.716

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Plus signs for the effect estimates in this column indicate that upperclassmen are more likely to have college plans than are underclassmen.

[c] Not significant at the .05 level.

[d] The total explained variation in the dependent attribute is obtained by summing the absolute values for the five independent attributes in each row.

TABLE V-3

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, YEAR IN SCHOOL, AND SEX SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Ability	Weighted Effect Estimates of Year in School[b]	Weighted Effect Estimates of Sex[c]	Total Explained Variation[e]
I	Absence of Academic Emulation	-.081	.129	.325	.044	.048	.627
II	Absence of Intell.-Estheticism	-.084	.141	.330	.049	.048	.652
III	Cohesive and Egalitarian Estheticism	.070	.136	.330	.048	.048	.632
IV	Absence of Scientism	-.061	.137	.332	.047	.049	.626
V	Humanistic Excellence	.076	.137	.328	.044	.050	.635
VI	Academically Oriented Status System	.018[d]	.139	.332	.047	.049	.585

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Plus signs for the effect estimates in this column indicate that upperclassmen are more likely to have high math scores than are underclassmen.

[c] Plus signs for the effect estimates in this column indicate that boys are more likely to have high math scores than are girls.

[d] Not significant at the .05 level.

[e] The total explained variation in the dependent attribute is obtained by summing the absolute values for the five independent attributes in each row.

It seems axiomatic that a high quality science program in the high school and commitment and dedication to science by the student body would generate in individual students a strong motivation to acquire knowledge leading to high performance in a closely related area such as mathematics.

The almost total disappearance of the effect of Factor VI lends itself to two alternative interpretations. The first is that the measure of criteria for status among students employed here is invalid. However, data are available which provide external validation of the sixth factor. Question 71 in the student questionnaire provides a measure of the extent to which achieving good grades is important for being popular in the immediate peer group. Schools were ranked by the percentage of students stating that grades are important, and the variable was then correlated with their ranks on Factor VI. The obtained rank correlation coefficient is .66 ($.001 > P$), indicating that the greater the percentage of students in the school stating that "good grades" are important in their friendship clique, the more the student body as a whole is perceived as emphasizing intellectual and achievement criteria for status.

The second interpretation is that the extent to which the student body as a whole stresses achievement for high status has, at best, only minor influence on the academic performance of its students. Evidence to be presented here and in the next chapter strongly suggests that this interpretation is highly plausible. The interpretation of Factor VI in the preceding chapter was that schools with high positive scores have social systems in which the student bodies socially reward intellectualism and high academic performance more than schools with low scores. The student bodies of schools with high scores were not described as rewarding intellectualism and achievement more than extra-curricular activities such as athletics (or cheerleading) or leadership in nonacademic organizations. An inspection of the data in Table V-4 reveals why such a claim was not made. For all schools combined, and for nineteen of the twenty considered separately, both leadership in activities and athletics (cheerleader for girls) are viewed as more important for status than high grades;[11] and in each of the twenty schools both activities and athletics are considered more important than "knowing a great deal about intellectual matters." With such evidence it is obvious that the label "Academically Oriented Status System" attached to Factor VI is not applicable to any of the twenty schools in absolute terms but only in relation to each other.

These results of Table V-4 are certainly consistent with Coleman's thesis (1961, p. 265) that, overall, high school students hold intellectualism and scholastic achievement in low esteem relative to athletics and other extra-curricular activities. Yet, despite this fact, these schools show considerable variation in their achievement levels and proportions of students with

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[11] The one exception is in School 01 where more importance is attached to grade achievement than to being an athletic star (cheerleader). It is noteworthy that this school is the only public high school in a college town in which the life of the community is centered around two institutions of higher learning. Even in this school, however, more importance is attached to leadership in activities than to high grades and intellectual matters.

TABLE V-4

MEDIAN RANK FOR EACH OF SIX STATUS CRITERIA BY SCHOOLS[a]

School Number	Coming from Right Family	Leader in Activities	Having a Nice Car (Clothes)	High Grades Honor Roll	Athletic Star (Cheerleader)	Intel-lectual Matters
01	04.4659	02.9352	03.6667	03.0877	03.9565	05.2077
02	03.6096	02.6318	03.7043	04.3154	03.1619	06.0766
03	04.4743	02.4545	03.4358	04.2351	02.8203	06.0694
04	05.2152	02.3963	04.0746	03.5485	02.7674	05.2275
05	03.8929	02.6198	03.8474	04.2904	02.8402	06.0453
06	04.9323	02.5267	02.9186	04.0645	03.2746	05.3130
07	04.5042	02.8133	03.0188	04.0152	02.8727	05.4423
08	05.0518	02.6124	03.0742	04.4037	02.5118	05.9961
09	04.6700	02.7394	03.4815	03.7273	02.2868	06.0109
10	04.3289	02.7153	03.2879	04.0946	03.0909	05.4058
11	05.6071	02.2000	03.4825	04.0606	02.5694	05.5369
12	05.3727	02.5738	03.3727	04.2421	02.3147	05.8657
13	04.6429	02.5515	02.5881	04.4937	03.0440	05.4680
14	04.8565	02.2553	03.8019	04.2448	02.1423	06.0487
15	04.6452	02.3702	03.5941	04.0516	02.9275	05.8657
16	03.6842	02.7398	03.3129	04.8783	02.5876	06.1310
17	04.7090	02.1318	03.7500	04.1311	02.8539	05.9615
18	05.3250	02.5101	03.5175	04.2276	02.7532	05.3600
19	04.5273	02.6845	03.2797	04.5658	02.6506	05.7955
20	05.0328	02.3176	03.9439	03.8775	02.6352	05.7677
All Schools Combined	04.7593	02.4909	03.4223	04.1760	02.7674	05.4945

[a] The six criteria are found in Questions 157-162 of the student questionnaire. Criteria in parentheses are the female counterparts of those for boys. The lower the rank for a given item the greater its importance for high prestige relative to other items.

higher educational plans, as shown in Table V-5. The results of Tables V-4 and V-5, in conjunction with the finding of Table V-3 that the effects of Factor VI tend to disappear when relevant individual attributes are controlled, raise serious doubts about the importance of school level, adolescent status systems on academic achievement.[12] However, before such a conclusion is reached for the present study a more detailed and systematic analysis of relevant data should be carried out.

Coleman's study, The Adolescent Society (1961, p. 265), included the hypothesis that in those schools where academic achievement is rewarded by the adolescent culture, the correlation between ability and performance is higher. That is, in schools where performance is more rewarded by the student body the students who achieve highest are those with the most ability, while in those schools where academic performance is an unrewarded activity the students of most ability will not be highly motivated to achieve.

To test the hypothesis, Coleman computed the relationship between the importance of "good grades" for membership in the leading crowd in each of his ten schools and the IQ's of students with A or A- grade averages relative to the entire student body. This analysis was carried out separately by sex. The ability level of high performers in each school was measured in terms of the number of standard deviations their mean IQ's were above the school mean for students of the same sex. This procedure made it possible to determine in each school what the ability level of high achievers was relative to the distribution of ability for each sex within the school. For both boys and girls, Coleman found a strong relationship (presented in graphic form on pages 263-264 of his book) between the emphasis placed on good grades in the schools and the average IQ of students with high grades.[13] In other words, the more academic achievement was rewarded by the student bodies of the ten schools, the more likely students of high ability were to be high achievers. He concluded from these results that students with ability are led to achieve only when there are social rewards (primarily from their peers) for doing so.

Using the procedure employed by Coleman which was just described, an attempt was made to replicate his findings in the present research. An analysis was carried out separately by sex for two different measures of achievement--math performance and English grades--and two different measures of the importance of academic criteria for status in the student status systems.

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[12] The data of Table IV-3, it will be remembered, reveal that of the six climate dimensions only Factor VI has no relationship to students' grade performance in English.

[13] The present authors calculated the relationship between these two variables separately by sex from the graphs Coleman presented. The rank order correlations are .636 and .717 for boys and girls, respectively. Both of these sizeable coefficients are significant beyond the .05 level.

TABLE V-5

MATH SCORES AND COLLEGE PLANS BY SCHOOL

School Number	Median Math C-Scores	Percentage of Students with Definite College Plans
01	5.3793	59.1
02	5.6832	60.7
03	4.6899	51.7
04	5.9418	80.6
05	5.7007	65.6
06	4.6264	53.4
07	3.6996	34.5
08	4.9561	52.8
09	4.3714	34.0
10	5.7535	55.1
11	5.9761	71.0
12	4.6667	46.2
13	4.1466	42.4
14	6.4038	68.7
15	4.5436	43.0
16	4.9721	66.2
17	5.6777	72.2
18	5.6345	75.1
19	4.1591	52.7
20	6.1942	69.4
All Schools Combined	(5.1359)	(58.8)

The results of the analysis for math performance will be presented first. The math scores of the top twenty percent of each sex were classified as high.[14] Since the performance of the various student bodies on the math test varied considerably, the math C-scores classified as high also varied from school to school. For example, in School 07 all boys with C-scores within the range 5-10 were classified as high while in School 14 (the institution whose male students had the highest achievement) only those with C-scores between 8 and 10 fell in the high category. For girls, similar variations in performance were encountered. Thus, in Schools 07 and 13 all girls with scores from 5 through 10 were classified as high, while in school 20 only those with scores 8-10 were placed in the high achieving category. For each sex in the twenty schools the mean ability level of students (measured by AR C-scores) with high math scores was computed and expressed in standard deviations above the school mean. This produced a standardized measure of the ability level of students with high performance on the math test relative to the school average for each sex, and provided data to answer the question posed by Coleman in his hypothesis: Do the variations in ability of high achievers correspond to variations in rewards by student bodies for achievement?

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[14] As noted by Coleman (1961, p. 262), in order to test the hypothesis it is important to have the same fraction of the student body of each school classified as high achievers. The distributions of math scores in the schools were such that the top twenty percent provided the most equitable cutting point.

Figure V-1 presents for boys the relationship between the ability level of high achievers and the first measure of the importance of achievement for high status among the student bodies of the schools--factor scores on Factor VI.[15] The relationship is statistically significant and consistent in direction with that found by Coleman; however it is considerably weaker--.379 as opposed to .636.[16]

For girls, however, the rank correlation between school scores on Factor VI and the ability level of students with high math scores is only .113. This finding offers no support for Coleman's results.

The second measure of the importance of academic criteria for high status is Question 160 in the student questionnaire--the importance of "high grades, honor roll" for high status among other members of the same sex within the student body. Schools were classified according to the percentage of students of each sex who ranked academic achievement as the most important criterion of the six listed in Questions 157-162.[17]

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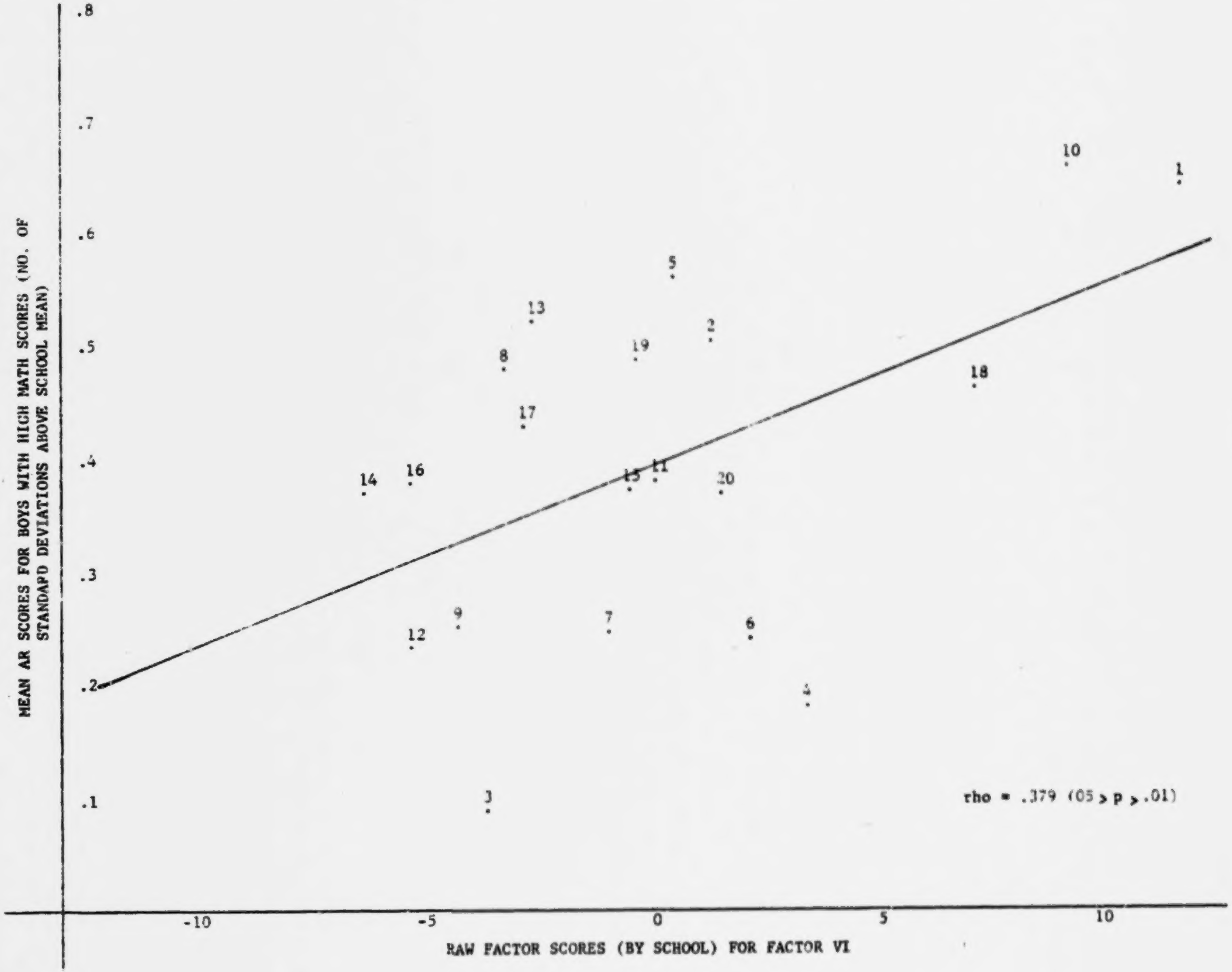
[15] For the eight different replications of Coleman's findings on this point (i.e., two measures of achievement and two measures of the importance of achievement for status among other students for each sex) this is the only relationship presented in graphic form. All of the other relationships are summarized in Tables V-6 and V-7.

[16] For N=20 a rank correlation of .377 is significant at the .05 level.

[17] This status item has its only statistically significant loading on Factor VI. For this reason there is some overlap between this measure of the importance of academic standards for status among students and Factor VI. However, Factor VI has three other status criteria with significant loadings as well as student and faculty reports of S.P. for Social Conformity. Furthermore, Question 160 is the most direct indicator of the importance of academic achievement for prestige among members of the student body of the same sex.

FIGURE V-1

ABILITY LEVEL OF HIGH ACHIEVING BOYS BY SCHOOL SCORES ON FACTOR VI



This measure was correlated separately by sex with the standardized ability scores for students with high math achievement scores. The correlation coefficients, along with those based on factor scores for Factor VI which were presented above, are given in Table V-6. The only relationship which is significant is the one for boys presented in Figure V-1 above. The other correlation for boys is in the predicted direction but far from significant. For girls, only Factor VI is related in the expected direction to the ability level of high achievers.

As noted in the preceding chapter, English performance is not an adequate measure of achievement across schools. However, it is meaningful to treat it as a measure of achievement in the type of analysis just carried out for math performance. This is because the procedure employed standardizes grades in English for each sex by having approximately the same percentage of students in each school with high grades and then measures the ability level of students with high grades relative to the average ability level of all students of that sex.

TABLE V-6

RANK ORDER CORRELATIONS FOR TWENTY SCHOOLS BETWEEN TWO MEASURES OF IMPORTANCE OF ACADEMIC CRITERIA FOR HIGH STATUS AMONG STUDENTS AND ABILITY LEVEL OF STUDENTS WITH HIGHEST ACHIEVEMENT ON MATHEMATICS TEST

Measures of Importance of Academic Criteria for Status Among Students	Correlation Coefficients for Boys	Correlation Coefficients for Girls
Factor VI - Academically Oriented Status System	.379[c]	.113[b]
Question 160[a] - Importance of High Grades, Honor Roll Among Members of Student Body of Same Sex	.069[b]	-.290[b]

[a] See student questionnaire in Appendix A for exact wording of item.

[b] Not significant at the .05 level.

[c] Significant at the .05 level.

For boys, the top six percent of each school were defined as having high English grades.[18] Since the grade distributions varied considerably across schools, this meant that in certain schools boys with a B average were included in the high category while in others only those with an A average were included.

As demonstrated in the preceding chapter, girls have significantly higher grades than boys. Furthermore, their grades show less variation; that is, they are more "bunched" or concentrated. For these reasons it was not possible to have the same proportion of girls with high grades as for boys. For each school, all girls in the top fourteen percent of the student body were classified as having high English grades. This cutoff point included girls with a B or higher average in certain schools while in others only those with an A average were placed in the high category.

The same two measures of the importance of achievement for status among student peers which were used in the analysis for math performance were correlated, separately by sex, with the standardized AR scores for students with the highest English grades. These results are presented in Table V-7 and clearly indicate no support for Coleman's original proposition that in those schools where academic performance is rewarded by the student status system, the correlation between ability and performance for high achievers will be higher than in those schools where academic performance is less highly rewarded. None of the relationships is significant, and the strongest correlation (which is for girls) is not even in the predicted direction. Thus, for eight tests of Coleman's hypothesis (the relationship of two measures of the importance of academic criteria for prestige among other students to two different measures of academic performance separately for each sex) in only one instance are the results supportive of his conclusion that in those adolescent status systems where achievement is rewarded the relationship between ability and high achievement is stronger. Furthermore, the pattern of relationships for girls and boys here are totally inconsistent with that found by Coleman. His results show that the "freedom for academic ability to express itself in high achievement is evident among the girls as it is among the boys"[19] (1960, p. 343). Exactly the opposite is true in this study. There is no evidence whatsoever in Tables V-6 and V-7 to support Coleman's hypothesis for girls. In fact, of the four correlations for data on girls, the two largest are negative.

The findings of Table V-3 that the effects of Factor VI on math performance tend to disappear when relevant personal attributes are controlled, combined with the overall negative results of Tables V-6 and V-7, are clearly not consistent with those of Coleman on this point. One possible explanation for this discrepancy is the difference in the measures used for the importance of

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[18] This figure most closely approximated an equal fraction of the male student body in each school with highest grades.

[19] Actually the relationship is slightly higher for girls than for boys in Coleman's study. As noted above, the rank correlation for girls is .717 while that for boys is .636.

TABLE V-7

RANK ORDER CORRELATIONS FOR TWENTY SCHOOLS BETWEEN TWO MEASURES OF IMPORTANCE OF ACADEMIC CRITERIA FOR HIGH STATUS AMONG STUDENTS AND ABILITY LEVEL OF STUDENTS WITH HIGHEST GRADES IN ENGLISH

Measures of Importance of Academic Criteria for Status Among Students	Correlation Coefficients for Boys	Correlation Coefficients for Girls
Factor VI - Academically Oriented Status System	.190[b]	.012[b]
Question 160[a] - Importance of High Grades, Honor Roll Among Members of Student Body of Same Sex	-.069[b]	-.340[b]

[a] See student questionnaire in Appendix A for exact wording of item.

[b] Not significant at the .05 level.

achievement for prestige.[20] In the two studies the format of the items upon which the measures are based differ. However, upon careful inspection it appears reasonable to consider the measures used here to be quite similar to the one employed by Coleman since both refer directly to the importance of academic achievement. If this is true, then it must be concluded that the proposition which holds that the more the adolescent status system rewards achievement, the more likely students of high ability are to be high achievers, has limited generality and replicability. This conclusion is not intended to imply that peer groups are of no consequence for the academic performance of students. Rather it indicates that there is not a global or pervasive status system among adolescents in the school which is important in channeling their energies either toward or away from academic achievement through the application of a set of sanctions. Instead, the findings of this section lead to a conception of the student bodies of high schools in terms of a network of cliques or friendship groups, each composed of members who are attracted to the group because of common social backgrounds, interests and values, and similar orientations toward academic achievement. Conversely, individual members' social and academic perspectives are reinforced by interaction in recurring social situations with these significant others. This conception, taken in conjunction with the earlier findings of Campbell and Alexander (1965) and those of the present research on the immediate peer group impact on college plans, make it important to determine if such proximal interpersonal influences operate on math achievement; and, if so, are they an important mediating link between the global dimensions of the educational and social climate of the school and the individual's level of achievement?

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[20] In Coleman's research the measure was obtained from responses to the open-end question "What does it take to get in the leading crowd?" Schools were ranked according to the percentage of students mentioning "good grades". In the present research both measures are based on items with structured responses which include a direct reference to the importance of grades for prestige among other students in the school.

The data for answering these questions are found in Table V-8. Item 71 in the student questionnaire, dealing with the importance of good grades for popularity among the respondent's clique in school, is incorporated into the analysis as the measure of such influences. In contrast to the results of Table V-2, which show that the climate effects on college plans are interpreted by controlling the effects of friends' college plans, the data of Table V-8 clearly demonstrate that the global climate and immediate peer group independently influence the achievement of students to roughly the same degree when family background, scholastic ability, and year in school are controlled.[21] Thus, with respect to academic achievement, these results provide an affirmative answer to the question posed by Campbell and Alexander (1965, p. 288): Are there global or school-wide constraints toward which the individual orients himself and on which he bases his behavior apart from those of significant others in his environment?

Two important questions are raised by the contrasting results of Tables V-2 and V-8. First, why are the effects of the immediate peer group on college plans larger than those on math achievement? Secondly, why are the climate effects on math achievement independent of the immediate interpersonal influences of the peer group?

The answer to the first question would seem to lie in the qualitative difference between these two dependent attributes. As noted earlier in this report, there probably is some distortion or unreliability in the college plans of a minority of students. That is, some students are expressing the wish or desire to attend rather than realistically planning to seek advanced education. The important point, however, is regardless of whether students' responses are measuring realistic plans or merely aspirations, such responses belong to a class of social-psychological phenomena which are highly susceptible to the influence of significant others in the immediate environment. There is an abundance of both descriptive and experimental evidence demonstrating this powerful influence which the immediate social context has upon the judgments, attitudes, and aspirations of individuals.[22] One of the areas where the impact is most

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[21] Again, it is observed that Factor VI has no effect on the achievement of students.

[22] A number of the studies are cited in Wilson (1959, p. 836). The most impressive of these is the experimental research in the tradition originated by Asch (1952, pp. 450-451) showing the great impact of older classmates on the social judgments of younger children.

TABLE V-8

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, YEAR IN SCHOOL, AND IMMEDIATE PEER GROUP INFLUENCES SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Ability	Weighted Effect Estimates of Year in School[b]	Weighted Effect Estimates of Immediate Peer Group Influences	Total Explained Variation[d]
I	Absence of Academic Emulation	-.078	.125	.318	.045	.084	.650
II	Absence of Intell.-Estheticism	-.081	.136	.323	.050	.086	.676
III	Cohesive and Egalitarian Estheticism	.067	.133	.324	.049	.082	.655
IV	Absence of Scientism	-.061	.133	.325	.049	.086	.654
V	Humanistic Excellence	.070	.132	.315	.058	.083	.658
VI	Academically Oriented Status System	.013[c]	.135	.326	.047	.083	.604

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Plus signs for the effect estimates in this column indicate that upperclassmen are more likely to have high math scores than are underclassmen.

[c] Not significant at the .05 level.

[d] The total explained variation in the dependent attribute is obtained by summing the absolute values for the five independent attributes in each row.

pronounced is that of attitudes toward advanced schooling. This assertion is based on the findings of numerous studies cited throughout this report. For a number of reasons, college attendance is highly salient for adolescents in middle-class high schools. Some of these have been emphasized earlier; namely, advanced training in a special area for upward social mobility or maintenance of one's ascriptive position in the larger society; and for a minority of students, developing the capacity for reflective thought and creative and scholarly accomplishment. There is, however, a third broad category of reasons to which only indirect reference has been made; yet, such reasons are of great importance to adolescents and are highly susceptible to the influence of the friendship clique. This is the category which Bay (1962, p. 984) refers to as social incentives. College provides the student an opportunity to engage in a number of extra-curricular activities such as fraternal organizations, student government, political clubs, and athletic events. In short, college attendance holds promise of engaging in "adult","sophisticated" activities which free the student of the adult control of high school teachers and parents--an autonomy which is highly valued by most adolescent cliques (McDill and Coleman, 1963, p. 918).

In contrast to aspiring to or planning to enroll in college, achievement (as measured by a standardized test) is not as susceptible to immediate interpersonal influences. Although the norms and values of peer groups regarding achievement can enhance or depress the motivation of individual members, such socializing effects are limited simply because there is an upper bound to the ability of each student to achieve on any standardized test. In other words, motivation (whatever its source) can explain only a limited amount of variation in achievement.

With respect to the problem of why the climate effects on math achievement persist when the influences of the peer group are controlled, it should be emphasized that the various dimensions of school climate developed in this study are composed to a great extent of variables which are indicators of both expressive and instrumental components of teachers' behavior--components which have been found to have a significant relationship with the achievement of students.[23] That is, affective components of teachers' behavior such as nurturance, warmth, understanding, and positive and negative sanctions have been found to be correlated with students' productivity. Furthermore, such affectively neutral components as subject-matter competence,[24] originality, adaptability, and skill at communicating with students also have a positive effect on students' performance. For students from primarily middle-class backgrounds and in high schools which are, overall, above average scholastically, high achievement is of crucial significance given its importance to success in a highly competitive society. In such a setting the faculty are clearly an important reference group. Consequently, the competence of teachers and the academic demands they make on students should certainly exert an effect on students' achievement independent of that of the immediate peer group.

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[23] See pp. 2-3 of Chapter II for a discussion of these studies.

[24] More recently, and not referenced in Chapter II, is the nation-wide study by Coleman, *et al*. (1966, Chapter 3) which shows that faculty ability (as measured by scores on a standardized verbal test) accounts for a substantial proportion of variance in students' performance on standardized achievement tests.

Returning now to Table V-3 for a discussion of the independent effects of the four individual attributes to variation in students' math performance, the data reveal that each is significantly related in the expected direction to the dependent attribute. Comparing the independent effects of ability and father's education in this table with their zero-order effects in Table IV-6 shows that the original strong effect of ability level is reduced very little by holding constant the other relevant personal attributes. However, the zero-order effect parameter for father's education has been appreciably reduced. This reduction is accounted for by the relationship between the two variables and indicates that a substantial proportion of the zero-order effect of father's education on performance is accounted for by the higher ability of students from middle-class backgrounds. The independent contribution of father's education to achievement is, undoubtedly, one indicator of the higher motivation level of middle-class students; or, as referred to in the preceding chapter, it is a crude indicator of the "achievement syndrome" which is characteristic of middle-class students.

Both sex and year in school show significant relationships to math performance, just as they did in Table IV-6. That is, boys have higher achievement than girls, and upperclassmen tend to score higher than underclassmen. It must be remembered that these sex and grade effects are a function of the imperfection of the C-scale standardization procedure.[25] Stated differently, the higher raw scores on the math test for upperclassmen and for males were not completely removed by the standardization scheme. Parenthetically, in noting the imperfection of the standardization procedure for math scores it should also be strongly emphasized that whether or not these two variables are controlled in Table V-3 should have no influence on the relationship between each of the climate dimensions and math performance. For sex and grade to influence the relationship of climate dimensions to performance, the two attributes would have to be systematically related to the educational climate of the schools.[26] On a priori grounds there is no reason whatsoever to expect the climate of the school to be related systematically to these two personal attributes. Nevertheless, to check the validity of this reasoning the effects of the six climate dimensions on math performance without sex and grade controlled were computed and compared with those in Table V-3. As anticipated, the magnitude of the two sets of effect parameters is very similar.[27]

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[25] See pp. 50-51 of Chapter III for a discussion of this problem.

[26] As a hypothetical example, schools with climates in which achievement and intellectualism are emphasized would have to have a significantly larger proportion of boys than schools lacking such environments.

[27] The two sets of effect parameters vary only at the third decimal place.

Finally, the total variation explained by the climate dimensions and personal attributes is consistently higher than that for college intentions. This difference can be explained by viewing scores on the math test as a more reliable and valid measure of achievement than are stated college plans an adequate measure of firm intentions to attend college.

Climate Effects on Intellectual Orientations

The effect estimates for the six climate dimensions on intellectual orientations with the four relevant personal attributes controlled are found in Table V-9. A comparison of the independent contribution of the climate effects here with the zero-order effects of Table IV-4 reveals that each has been reduced somewhat by holding constant the personal characteristics. Factors III and IV have been reduced the greatest amount--to the point that they are no longer statistically significant. It is surprising that Factor III is not significantly related to students' intellectual values since two of the variables which have significant loadings on the factor--Variables 6 (F.P. for Vocationalism) and 17 (S.P. for Estheticism)--are indicators of the degree of emphasis by teachers and students on intellectual-esthetic values. In an attempt to understand this anomaly, the zero-order effects on students' intellectual values were computed for each of the five variables which has a significant loading on Factor III.[28] Although each of the five effect parameters is in the predicted direction,[29] they are all very small.[30] Furthermore, all five of the variables are more strongly related to college plans and math performance than to students' intellectual values. Thus, those aspects of the school climate which are most indicative of intellectualism and estheticism have less impact on students' intellectual orientations than on their achievement and desire for higher education. These results further demonstrate the lack of prominence of intellectualism in the cognitive field of the high school students in this study.

Although the zero-order effect parameter of Factor VI on intellectual values is quite small (.053 as shown in Table IV-4), it is reduced the least of the six factor dimensions and remains statistically significant when personal attributes are controlled. The zero-order effects on intellectual values for

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[28] These calculations were made on a representative ten percent sample (N=2,053) of the students in each school because the computer costs for such calculations on the entire sample would have been prohibitive. In this segment of the analysis the schools were ranked according to their median values on each of the variables and then were collapsed into quartiles. In this manner each variable with a significant loading on Factor III was treated as a contextual variable.

[29] "Predicted direction" here means that the sign of the effect parameter is consistent with that for its loading on Factor III.

[30] For example, the effect estimate for the variable with the strongest relationship to students' intellectual values--#17, teacher perception of S.P. for Intellectualism--is .047, which is not significant at the .05 level for the ten percent sample. On the other hand, the effect estimate of this variable on math performance is .142 ($.01 > p$). None of these effects is presented in tabular form.

TABLE V-9

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON PERSONAL ORIENTATION TOWARD INTELLECTUALISM WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, YEAR IN SCHOOL, AND SEX SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Ability	Weighted Effect Estimates of Year in School[b]	Weighted Effect Estimates of Sex[c]	Total Explained Variation[e]
I	Absence of Academic Emulation	-.050	.052	.091	.009[d]	-.065	.267
II	Absence of Intell.-Estheticism	-.041	.051	.089	.010[d]	-.066	.257
III	Cohesive and Egalitarian Estheticism	.021[d]	.056	.090	.011[d]	-.067	.245
IV	Absence of Scientism	-.023[d]	.059	.093	.010[d]	-.066	.251
V	Humanistic Excellence	.037	.055	.088	.008[d]	-.067	.255
VI	Academically Oriented Status System	.047	.053	.092	.013[d]	-.067	.272

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Plus signs for the effect estimates in this column indicate that upperclassmen are more likely to have high intellectual orientations than are underclassmen.

[c] Negative signs in this column indicate that girls are more likely to have high intellectual orientations than are boys.

[d] Not significant at the .05 level.

[e] The total explained variation in the dependent attribute is obtained by summing the absolute values for the five independent attributes in each row.

each variable which has a significant loading on Factor VI were computed to determine which variables are making a contribution to explanation of the dependent attribute. Although each of the six variables is related to students' intellectual orientations in the predicted direction (that is, in the direction consistent with their rotated loadings on Factor VI), all variables except numbers 3 and 16 (teacher and student perceptions of S P. for Social Conformity) and number 37 (knowledge of intellectual matters for high status) are practically zero. Thus, it appears that these three climate characteristics account for most of the limited explanatory process of Factor VI on students' intellectual values. One possible explanation for this finding is that when the student body permits individualism and does not devalue intellectualism as a criterion for social status, individual students are more likely to adhere to intellectual values.

If the sixth factor has validity and reliability as a measure of the importance of academic criteria for status among adolescents in these twenty schools, then the differential effects of this climate dimension on intellectual values and math achievement may be viewed as validation of Brittain's thesis (1963) that the extent of conformity of adolescents to peer standards depends upon the type of choice to be made by the adolescent. More specifically, although the students' social system has only very limited impact upon any of the three types of academic behavior considered in this study, the relative magnitude of its effect varies according to the content of the behavior being considered. Thus, at the school level, students' achievement (measured either by a standardized test or grades in school) is insensitive to the degree of emphasis placed on academic criteria for status. However, their intellectual orientations are to a limited degree a function of the tolerance of intellectual values and individualism by the student social system.

Overall, it is the case in Table V-9 that the six climate dimensions have less effect on intellectual values with the personal characteristics controlled than on college plans and math achievement. These results are consistent with the relative magnitude of zero-order effects of climate dimensions on the three dependent attributes shown in Tables IV-1, IV-2, and IV-4. Furthermore, Table V-9 shows that, with the exception of sex, the four personal characteristics have less explanatory power with respect to intellectual values than to achievement or college plans.[31] This finding is also totally consistent with the zero-order relationships of these four characteristics to the dependent attributes shown in the preceding chapter. Looking at the proportion of total variation accounted for by the climate dimensions and the personal characteristics shows that on the average only twenty-five percent of the variation in intellectual orientations is explained, which is less than one-half that of educational intentions and math achievement.

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[31] In fact, only ability makes a stronger independent contribution to variation in intellectual values than does sex. There is little empirical research on sex differences in intellectual incentives as contrasted with achievement incentives. It is noteworthy, however, that the sex difference in this table is consistent with a prediction offered by Bay (1961, p. 895) that at the college level women students are more likely to focus on intellectual incentives than are men. His rationale seems applicable to the difference found here: "They (women) are not equally widely doomed to full-time participation in the kind of fierce competition for income and status that many male students anticipate; quite realistically, young women more often may come to believe that efforts toward a fuller understanding of men and of themselves may be highly useful; also the anticipated role of wife and mother leaves more room for relaxed reflection than does the anticipated role of a socially up-and-coming young man in the business world."

There are two conflicting interpretations for this discrepancy. The first is that the six-item intellectualism scale is not a valid measure of the concept. This would be a tempting interpretation were it not for the fact that the scale has a substantial relationship with English grades, college plans, and math performance, even with father's education and ability level controlled (as shown in Table IV-11 of the preceding chapter). Table V-10 shows the same independent effects of intellectual values on these attributes originally presented in Table IV-11. In addition, however, Table V-10 gives the independent effects of father's education and ability level on the three dependent attributes, permitting an assessment of the relative explanatory power of each independent variable. It can be seen that students' intellectual orientations account for more variation in English grades than either ability or father's education. The attribute also has a stronger relationship to college plans than does ability; and, finally, it is only slightly less associated with math performance than is father's education. These results are clear evidence of the validity of the measure of students' intellectual orientations and render the argument untenable that the measure is inadequate.

The second interpretation of the small proportion of variation in students' intellectual values explained by the climate dimensions and individual level variables is that offered in Chapter IV: Intellectualism is not a salient issue for a great many students because there is a lack of emphasis placed on it in the larger society, in all levels of the educational system, and in the home environments of many students. Given the facts that the intellectualism scale has validity and that both the personal characteristics and the dimensions of the school climate have only limited explanatory power, this interpretation seems defensible. It is important, in this connection, to return to Bay's discussion of intellectualism(1963, pp. 972-1005) at the college level to which reference was made in the preceding chapter. Although Bay does not use the concept salience in his theory of the intellectual development of college students, his discussion of the factors that militate against the accomplishment of the main purpose of higher education--to develop rational and intellectual individuals[32] --is highly consistent with the explanation based on salience.

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[32] Bay makes a crucial distinction between the academic incentives of students and their intellectual incentives. The former refers to the value the student attaches to good grades, while the latter refers to the satisfaction the student feels in attempting to broaden his understanding and increase his power of reflection. He admits that combinations of the two incentives often occur, but argues that this makes it crucial to distinguish between them. This distinction between academic and intellectual incentives is similar to the one made earlier in the present analysis between extrinsic and intrinsic valuation of knowledge.

TABLE V-10

INDEPENDENT EFFECTS OF PERSONAL ORIENTATION TOWARD INTELLECTUALISM, FATHER'S EDUCATION, AND ABILITY ON THREE DEPENDENT VARIABLES[a]

Independent Attributes	Dependent Attributes		
	Math Performance	English Grades	College Plans
Intellectual Orientations	.137[b]	.206[b]	.191[b]
Father's Education	.142[b]	.086[b]	.225[b]
Ability	.310[b]	.194[b]	.160[b]

[a] All effects are standardized to dichotomous form. They represent the proportion of variation in the dichotomized dependent attribute explained by each independent attribute with the other two independent attributes controlled. For example, the effect of father's education on math performance with intellectual orientations and ability held constant is .142.

[b] Significant at the .01 level.

Bay enumerates several reasons why the typical college community is an impediment to the intellectual development of students and instead promotes social and academic incentives. The most obvious reason, he argues, is that the system of teaching is geared to the desires of academic strivers rather than to intellectuals because of the organization of the typical college or university--a proliferation of courses for both students and professors which fragments the time of each, making it difficult to pursue intensively the mastery of any subject matter; the publish or perish syndrome on most campuses which interferes with the opportunity of teachers to prepare intellectually stimulating courses; and finally the grading system which forces the student to compete with his peers and decreases the opportunity for engaging in a joint intellectual enterprise with the teacher.

A second reason is the tendency of many professors to lose whatever intellectual interests they may once have had because of their desire for financial security through tenure, which is not enforced by quality teaching but by the number of publications.

A third and most crucial reason the intellectual incentives of students are not nurtured in the college environment is that in the larger society, of which the college is a part, there is a tenuous relationship between intellectual quality and social mobility. Bay contends that one of the most critical determinants of student incentives is the perceptions they have of the instrumental value of various types of efforts in college in enforcing the performance of roles they anticipate in their post-college careers. He argues that intellectual effort (as opposed to academic effort) is not viewed by most students as having utilitarian value for their future careers; intellectual incentives pervail in a noticeable proportion of students in such areas as the humanities, liberal theology, art, social sciences, and in the more fundamental natural sciences. In most other fields, he argues, there is at best only limited incentive for the student to employ his mind for any purpose other than learning the subject-matter necessary to meet the requirements of an occupation which will bring him economic security and social prestige in the larger society.

Although Bay presents no empirical evidence to support his thesis, it is highly consistent with the argument of Corwin (1965) and several other commentators about the lack of importance of intellectualism in the American educational system. Even more important is the support it provides for the interpretation of the results of Table V-9, for if the college environment does not generally promote the intellectual development of college students, one would certainly expect the secondary school system to stress intellectualism even less.

Bay also speculates on how some students manage to acquire intellectual incentives despite the fact that the educational system and the larger social order are primarily an arena for developing social and occupational skills, not the faculties of rationality and reflection and an intrinsic valuation of knowledge.

Bay's _speculative_ frame of reference involves two obvious primary sources of intellectual development in the individual--the family and the early school experiences. He argues that the family which inculcates in the child a sense of personal worth and high self-esteem creates an individual who is free of anxiety, which is of crucial importance in intellectual development. Stated in negative terms, parents who reject the child create doubts in him about his worth as a human being, leading to personal anxiety which invariably forestalls a rational or intellectual approach to the problems the individual faces in his mental development.

Secondly, the school environment which fosters intellectualism in the child is one which not only permits full expression of his impulses but encourages him to utilize such impulses as the primary motivational basis for the learning process. On the other hand, the school which induces the child to accept uncritically answers to questions on the ground that a belief is socially expected is an institution which stifles curiosity, the _sine qua non_ of rational and reflective thinking.

As noted earlier, Bay does not support his argument about the sources of intellectualism with data; consequently, it is impossible to determine directly the validity of his explanation. It is certainly beyond the scope of the present study even to attempt to provide a definitive answer to the problem of sources of variation in intellectual values of students as posed by Bay. Such an attempt would be a major research undertaking in itself, involving an intensive longitudinal study of both the family and school influences on the intellectual development of students over a considerable span of their educational careers. However, it is worthwhile in the present analysis to attempt, in a purely exploratory manner, to isolate personal and background characteristics (other than the ones already considered) which are associated with students' intellectual values since there is little empirical evidence available on this topic.[33] Such an analysis will perhaps make some contribution toward constructing a social-psychological profile of high school students who are intellectually oriented. However, before attempting to isolate correlates of intellectualism in the present sample, it is important to cite findings from a limited number of studies of adolescents which have some measure of relevance to this neglected area of research.

Getzels' and Jackson's research (1960) on the "gifted student" is related to this problem area. In their study of high school students, these two researchers were concerned with variables which distinguish two different types of gifted individuals--those high in I.Q. and low in creativity and those high in creativity and low in I.Q. They examined the achievement motives, fantasy productions, academic performance, and teacher preferences of these two groups of adolescents. Their more important findings are as follows: (1) The two groups were equal in school achievement. (2) The intelligent subjects were more preferred by the teachers than were the creative ones. (3) There were no significant differences in need for achievement (McClelland, et al., 1953). (4) There were important differences in fantasy productions, with the creative group using more stimulus-free, humorous, and imaginative themes.

Getzels and Jackson also investigated the occupational goals of the creative and intelligent groups. They found significant differences in both the quality and quantity of their occupational goals. The creatives were more likely to mention unconventional occupations such as writer, adventurer, and inventor, while the high I.Q.'s were more likely to choose the conventional professions such as lawyer and doctor--occupations which involve less career risk. With respect to quantity of occupations, the creatives considered a greater range of career possibilities than did the highly intelligent students. That is, the former were able spontaneously to mention a larger number of career possibilities for themselves.

Finally, important differences were uncovered between the two groups with respect to the extent to which "teacher standards" and "success in adult life" were motivating factors in their career aspirations. The high-I.Q. students aspired to personal qualities which they believed were important for adult success and those favored by teachers. On the other hand, the creative students favored personal qualities which bore no relationship to those they felt were important for adult success; they tended to favor personal qualities which were the reverse of those they believed teachers valued. Getzels and Jackson thus concluded that the creative subjects were more autonomous with respect to the more widely accepted adult standards of success and possessed a need to diverge from such standards and accept the risk and uncertainty of the unknown with respect to career choices.

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[33] As noted by Bay, the voluminous literature on the academic behavior of students and on experiments in teaching has almost invariably been restricted to academic achievement or aspirations as the dependent variable, not intellectual achievement or values.

They further concluded that the cognitive functioning of the high-I.Q. and high-creativity groups was qualitatively different. Borrowing terms from Guilford (1957), they contend that the high-I.Q. student favored the "convergent" mode of thinking while the creative student exemplified the "divergent" mode of cognitive functioning. They distinguish between these two types of ability as follows (p. 17):

> "It seems that the essence of performance of the high-creativity adolescents lay in their ability to produce new forms, to risk conjoining elements that are customarily thought of as independent and dissimilar, to 'go off in new directions'. The creative adolescent seemed to possess the need to free himself from the usual, to diverge from the customary behavior; he seemed to enjoy the risk and uncertainty of the unknown. In contrast, the high-I.Q. adolescent seemed to possess to a high degree the ability and the need to focus on the usual and to be channeled and controlled in the direction of the right answers, the socially accepted solution. He appeared to shy away from the risk and uncertainty of the unknown and to seek the safety and security of the already known."

In a later study of creative and academic performance among National Merit Finalists, Holland (1961) obtained results which supported Getzels' and Jackson's findings.[34] Holland was interested primarily in determining if there were personal, demographic, and background differences between talented high school students who were high achievers (as measured by grade point average) and those who had demonstrated high creative performance as measured by accomplishments indicative of original contributions in the sciences and arts. His most unequivocal finding was that for an intellectually superior sample, creative performance was generally unrelated to academic performance as measured by grades. He concluded that academic performance was a function of a personal syndrome characterized by perserverance, self-control, good behavior, and rigidity, whereas the personality pattern of the creative student was described as independent, expressive, consciously original, and having aspirations for future achievement.[35] Holland's results are consistent with the earlier voluminous theorizing about creativity which depicted this type of individual as independent, complex in outlook, curious, self-assured, intellectual, interested in science and art, and generally effective.

Most important in Holland's study are data which present clues about familial sources of creativity--data usually not available in studies of creativity or intellectualism. He found the parents of the creative students to be more permissive and supportive of the child's ideas and impulses which he believes are conducive to communication with the larger environment and the development of intellectual curiosity. These family background differences are consistent with the generally accepted hypothesis that creative persons tend to come from permissive home environments which encourage independence of thought and exploration of self and environment.[36] They are also consistent with studies of the effect of child-rearing practices upon achievement motivation and high achievement. Representative of such studies are the works of Rosen and D'Androde (1959) and Strodbeck (1958). Using male subjects, Rosen and D'Androde found a positive relationship between early achievement and independence training in the home and later achievement motivation.

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[34] An unpublished version of Holland's paper is cited in Coleman (1961, p. 323).

[35] The reader will notice the similarity in the descriptions of the "creative student" of Holland, the "divergent thinker" of Getzels and Jackson, and the "student intellect" of Bay.

Strodbeck conducted a comparative study of the influence of family role structure and value systems on the achievement level of Italian and Jewish boys.[37] He found that overachievers scored higher than underachievers on both need for achievement and achievement values. More important to the present discussion, however, he showed that these two variables were positively related to the degree of independence and equalitarianism in the interaction patterns between parents and sons, with the characteristics more prevalent in Jewish families. Moreover, Jewish families were more likely to espouse those values in their child-rearing practices which have been stressed as important for achievement motivation and high self-esteem--a belief that the world is orderly and predictable and, therefore, the individual can and should control his destiny; the belief that the child should be willing to sever family ties and make his own way in life; and a belief in individual rather than collective credit for work accomplished.[38]

Taken together these studies suggest a number of variables for which measures are available in the present study (from the student questionnaire) which should differentiate between high and low scorers on the intellectualism scale. Since it was demonstrated earlier that there are significant differences between boys and girls on the intellectualism scale, the results of this analysis are presented separately by sex.

Table V-11 shows the effect estimates of twenty-five personal and background characteristics on intellectual orientations for a representative ten percent sample of the students in each school.[39] Since these relationships are

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[36] Elder (1965, p. 81) states: "Many of the personal qualities and skills that enable children to meet standards of excellence--self-reliance, competent judgment, problem-solving ability, and a questioning mind--are acquired in parent-child relationships, providing guidance and yet allowing the child freedom to develop individual mastery and responsible decision-making." Elder presents cross-cultural data from the U.S., Great Britain, West Germany, Italy, and Mexico to support this proposition.

[37] Subjects from these two ethnic groups were chosen because of their different rates of social mobility in American society.

[38] Cited by Boocock (1966, p. 36).

[39] The entire populations of the schools were not used here because of computer costs.

TABLE V-11

PERSONAL ORIENTATION TOWARD INTELLECTUALISM AS A FUNCTION OF PERSONAL AND BACKGROUND CHARACTERISTICS FOR A TEN PERCENT REPRESENTATIVE SAMPLE OF STUDENTS[a]

Description of Characteristics	Question Number in Student Questionnaire	Boys (N=1,040)		Girls (N=1,013)	
		Effect Estimates	Level of Significance	Effect Estimates	Level of Significance
Occupational Preferences:					
Prefers Job Which Gives Feeling of Accomplishment	431	.157	.01	.175	.01
Desires to be a Scientist	424a.	.247	.01	.119	.05
Plans to be a Scientist	424b.	.293	.01	.223	.05
College Related Values[b]:					
Intellectual Purposes in Attending College[c]	338	.252	.01	.195	.01
Choice of College Based on High Educational Standards	353	.274	.01	.204	.05
Unimportance of Being a Campus Leader in College	368	.320	.01	.417	.01
Importance of Completing Significant Research in College	369	.235	.01	.264	.01
Unimportance of Maintaining "A" Average in College	370	.086	n.s.	-.022	n.s.
Leisure-Time Activities and Tastes:					
Prefers Classical or Folk Music	40	.247	.01	.221	.01
Watches TV Less Than 1 1/2 Hours Per Day	43	.107	.01	.103	.01
Has Intellectual Hobby[d]	57	.096	.01	.148	.01
Does Much or Great Deal of Serious Reading Outside of School Work	58	.238	.01	.146	.01
Enjoys Art or Classical Music	62	.083	.01	.140	.01
Enjoys Reading	64	.311	.01	.209	.01

TABLE V-11 (continued)

Description of Characteristics	Question Number in Student Questionnaire	Boys (N=1,040)		Girls (N=1,013)	
		Effect Estimates	Level of Significance	Effect Estimates	Level of Significance
Academic Orientation Toward High School:					
Devotes 1 1/2 Hours or More to Homework Daily	24	.221	.01	.319	.01
Would Be Proud to Serve as Teacher's Assistant in Class	155	.207	.01	.167	.01
Home Background:					
More Than 250 Books in Home	132	.133	.01	.097	.01
Ethnic Background is Jewish	128	.203	.01	-.002	n.s.
Self-to-Others Orientation:					
Importance of High Grades for Popularity in Peer Group	71	.273	.01	.251	.01
Dates Once a Month or Less	108	.089	.01	.136	.01
Would Prefer to Date Best Student	135	.323	.01	.361	.01
Asserts Autonomy With Respect to Peer Group	139	.001	n.s.	.119	.01
Pleasing Parents is Unimportant	44	.176	.01	.111	.01
Living Up to Religious Ideals is Unimportant	46	.009	n.s.	.040	n.s.
Being Liked by Other Students is Unimportant	47	.281	.01	.342	.01

[a] The effect parameter for each relationship between a characteristic and the students' score on the intellectualism scale is based on a 2 x 2 table.

[b] The N's for the variables under this heading vary from those reported in the body of the table. The relationships between each of these five characteristics and the dependent attribute were computed only for those seniors with definite college plans.

[c] The following purposes of a college education in the list contained in items 328-337 were classified as intellectual: develop knowledge and interests in community, national, and world problems; develop understanding of principles of science; develop understanding of principles of human behavior; and develop understanding of such subjects as philosophy, art, literature, and music.

[d] The following categories of hobbies were classified as intellectual: collections; constructing; science; reading; writing; art; and playing a musical instrument.

based on a small sample of the school populations, the .05 level of significance, not the .01, is chosen as the level beneath which any relationship is ignored.

The findings of the table may be summarized as follows. For both boys and girls, the intellectual student is more likely to desire a job in which "the work is important and gives a feeling of accomplishment" (Q.431),[40] to desire to be a scientist (Q. 424a), and to "realistically" plan to be a scientist. These results demonstrate that the intellectually oriented students are more likely to have occupational values and choose careers which reflect creativity and intellectuality than those with low scores on the intellectualism scale. These results are consistent with the findings of Getzels and Jackson (1960) cited above demonstrating that creative students are more likely to have unconventional occupational preferences than those low in creativity.

Turning to the collegiate values of the two groups, the results clearly indicate that students with high scores on the intellectualism scale evaluate more positively intellectual incentives in college attendance than those with low scores. It is especially noteworthy that the former are more likely to define success in college in terms of original and scholarly research (Q.369)[41] and considerably less likely to aspire to campus leadership (Q. 368). There are no significant differences between the two groups in terms of the value they place on grade achievement. However, among boys there is a tendency for the intellectual students to rank high grades as less important.[42] For girls the differences are in the opposite direction, but the relationship is almost non-existent.

Male and female students with high intellectualism scores are also shown to engage in more intellectually related activities outside of school and to have more esthetic tastes than those with low scores. Specifically, the former spend less time watching T.V., are more likely to have an intellectual hobby, and do more serious reading (other than that required for school work). They are also significantly more likely to prefer classical or folk music and to enjoy art and reading.

With respect to orientation toward high school, the data indicate that for both sexes the high scorers on intellectualism devote more time to homework assignments. They are also more likely to report a sense of satisfaction from serving as a teacher's assistant in class. These two findings suggest that the intellectual student is more academically oriented in his outlook toward school than his low-scoring counterpart.

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[40] This variable is accepted on face validity by the authors as a crude measure of preference for "creativity" in an occupation as opposed to "security." For a similar distinction in adolescents' occupational values, see Boyle (1966, p. 637). This relationship suggests that the intellectually oriented student is concerned with individual credit for accomplishment rather than security.

[41] This result seems consistent with Holland's conclusion (1961, p. 143) that good grades are a function of socialization (i.e., citizenship and popularity), whereas creative performance is a function of conscious concern with accomplishment and originality.

[42] Getzels and Jackson (1960, p. 15) found that their creative subjects assigned slightly less importance to high grades than did those with low scores on creativity.

Unfortunately, only two crude indicators of family sources of intellectualism (other than those of Table V-9) are available in the table.[43] Nevertheless, the two variables listed under the heading "Home Background" provide some indirect evidence of parental influences. The first variable, the reported number of books in the student's home seems, as contended by Kirk (1965, p. 62), to be a reasonable indicator of the parents' degree of intellectualism. As one would expect, there is a positive and significant relationship between this factor and the respondent's intellectualism. The second characteristic under this category--ethnic background of the student--shows a rather strong relationship for boys but none for girls:[44] Boys from Jewish backgrounds have significantly higher intellectualism scores than those from other ethnic backgrounds. This finding is certainly consistent with the great importance of education and intellectualism in the Jewish subculture. It is also consistent with Strodbeck's finding (1958) regarding the positive influences of the family structure and value systems of Jews on the achievement levels and values of their sons.

The final category of Table V-11, "Self-to-Others Orientation," includes a number of variables which have significant relationships with students' intellectual values. Briefly stated, the results demonstrate that for both boys and girls, students with intellectual values are more likely to belong to cliques which stress good grades for popularity (Q. 71); less likely to date frequently (Q. 108); more likely to value dating high achievers (Q. 135); and more asocial with respect to both parents (Q. 44) and student colleagues (Q. 47). In short, the intellectual student seems to be more oriented toward other students who share his intellectual perspective but, simultaneously, more independent of both peers and parents than the student with a low intellectualism score. Thus, he is more socially independent.

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[43] Undoubtedly, more refined indicators of various aspects of family structure would account for a much larger proportion of the variation in students' intellectual orientations than those presented in Table V-11 or in earlier sections of the analysis. Specifically, adequate measures of aspects of child-rearing practices such as dominance vs. equalitarianism and the degree of emphasis by parents on instilling in the child such traits as independence, intellectual competence, control of destiny, and inquiringness or curiosity would substantially increase the explained variation in intellectualism.

[44] Any explanation for the failure of this ethnic difference to hold for girls is without supporting evidence. Perhaps the high academic and intellectual expectations which Jewish parents have for their sons are not inculcated to the same degree in their daughters. Boroff (1961, p. 83) states that in the lower-middle-class Jewish family the daughter's education has a lower priority than the son's, and in the orthodox family the daughter's education is regarded as expendable. Finally, in describing the prototype of the upper-middle-class Jewish girl at college he states (p. 87): "Most of them, with a stubborn denigration of their own academic talents, view out-of-town college as merely an excursion in husband-hunting."

Overall, the results of Table V-11 present a profile of intellectually oriented students similar to the creative and achievement-oriented adolescents described by such researchers as Getzels and Jackson (1960), Holland (1961), and Strodbeck (1958) and, thus, further demonstrate the adequacy of the measure of this concept in the present study.

Effects of Climate Dimensions on College Plans and Mathematics Achievement with Students' Intellectual Values Controlled

In Tables V-1 and V-3 it was demonstrated that although controlling ability, family background, year in school, and sex reduces the zero-order effects of the climate dimensions on college plans and mathematics achievement, overall the climate factors retain a portion of their explanatory power. However, one critical question remains unanswered by the results of these two tables: Does the prevalent climate of the school exert an influence on the educational plans and achievement level of its students independent of their internalized academic orientations? As stated by Blau (1960) in his original formulation of structural effects,[45] to isolate a structural effect, a relationship between the group level attribute and a dependent attribute at the individual level must be demonstrated while the corresponding or closely related characteristic for individuals is held constant. In the present analysis, students' scores on the intellectualsim scale are employed as the measure of their individual academic orientations. This scale, both in Chapter IV and earlier sections of this chapter, has been shown to have an acceptable level of internal consistency and a high degree of validity. Thus, the scale provides an adequate indicator at the individual level of the contextual attributes measured by the six climate dimensions.

Tables V-12 and V-13 present the effects of the climate dimensions on college plans and math achievement, respectively, with students' intellectual values held constant. In the two tables, father's education and student's ability are also controlled. Sex and year in school are not held constant here because, even with the large number of cases available in this study, to control six attributes simultaneously would result in too few cases in the cells of the partialed tables to obtain reliable estimates of the effect parameters for the independent attributes.[46] As shown earlier in the analysis, whether year in school and sex are controlled has no effect on the relationship between the climate dimensions and math performance.[47] Further analysis reveals that controlling sex and grade has almost no influence on the magnitude of the relationship of the climate dimensions to college plans. Given these two findings, it is safe to conclude that any differences in the magnitude of effects of the climate dimensions on college plans and math achievement in Tables V-1 and V-3 and those in Tables V-12 and V-13 are not a consequence of whether sex and grade in school are held constant.

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[45] Blau (p. 179) considers structural effects as a special type of "contextual propositions."

[46] In addition, to have included all six independent attributes would have exceeded the capacity of the computer program used in obtaining the effect parameters.

[47] See footnote 27 of this chapter for a discussion of this point.

TABLE V-12

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON COLLEGE PLANS WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, AND PERSONAL ORIENTATION TOWARD INTELLECTUALISM CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Scholastic Ability	Weighted Effect Estimates of Intellectualism	Total Explained Variation[d]
I	Absence of Academic Emulation	-.059	.202	.149	.190	.600
II	Absence of Intell.-Estheticism	-.070	.210	.154	.188	.622
III	Cohesive and Egalitarian Estheticism	.045	.216	.155	.188	.604
IV	Absence of Scientism	-.024[b]	.216	.158	.190	.588
V	Humanistic Excellence	.051	.216	.154	.190	.611
VI	Academically Oriented Status System	.023[c]	.214	.156	.187	.580

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Significant at the .05 level.

[c] Not significant at the .05 level.

[d] The total explained variation in the dependent attribute is obtained by summing the absolute values for the four independent attributes in each row.

TABLE V-13

SUMMARY EFFECTS FOR EACH OF SIX CLIMATE DIMENSIONS ON MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, AND PERSONAL ORIENTATION TOWARD INTELLECTUALISM CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates of Climate Dimensions	Weighted Effect Estimates of Father's Education	Weighted Effect Estimates of Scholastic Ability	Weighted Effect Estimates of Intellectualism	Total Explained Variation[c]
I	Absence of Academic Emulation	-.074	.119	.298	.137	.628
II	Absence of Intell.-Estheticism	-.075	.130	.303	.136	.644
III	Cohesive and Egalitarian Estheticism	.070	.125	.303	.134	.632
IV	Absence of Scientism	-.058	.126	.306	.137	.627
V	Humanistic Excellence	.074	.127	.302	.135	.638
VI	Academically Oriented Status System	.006[b]	.131	.305	.136	.578

[a] All effect estimates are standardized to dichotomous form. Unless otherwise noted effect estimates are significant at the .01 level.

[b] Not significant at the .05 level.

[c] The total explained variation in the dependent attribute is obtained by summing the absolute values for the four independent attributes in each row.

A comparison of the results of Tables V-12 and V-13 with those of V-1 and V-3 indicates that (with one exception to be discussed below) the climate dimensions continue to exert an effect in the expected direction on college plans and math performance. In fact, controlling students' intellectual values reduces the effects of the climate factors on the two dependent attributes only a negligible amount. Thus, overall, the contribution of the various aspects of the school climate to students' performance and college intentions is independent of their internalized intellectual orientations.

The one exception to this generalization is the relationship of Factor VI to both dependent attributes. In Table V-3 it was shown that the effect of Factor VI on math achievement virtually disappears when relevant personal attributes are controlled. Table V-13 indicates that the extent to which the student status systems stress achievement for high status has, for all practical purposes, no effect on math achievement when intellectual values are controlled. Furthermore, in Table V-12 it may be observed that the effect estimate for Factor VI on college plans is reduced to a level of non-significance when students' intellectual values are controlled. Thus, evidence is again uncovered that the extent to which the dominant student subculture of the school stresses the importance of academic criteria for status has neither substantively nor statistically significant influence on two important variables--performance on a standardized achievement test and college plans. Whether the discrepancy between these results and those of Coleman (1960) on this point are attributable to differences in the measures of peer rewards for achievement, to different types of school populations, or to a fundamental change in the orientation of the new generation of high school students toward the importance of achievement and its relation to college attendance cannot be answered definitively here.

Regardless of the source of the discrepancy, it should again be reiterated that the proposition which holds that there is _a_ status system among adolescents in the school which acts as a powerful impediment or facilitator to individual achievement and advanced educational plans should not be uncritically accepted.

Summary and Discussion of Results

The data presented in this Chapter reveal a modest and consistent effect of various aspects of school climate on three categories of academic behavior of students--college plans, mathematics performance, and intellectual orientations--with the effects of relevant personal variables controlled; namely, sex, year in school, father's education, and scholastic ability. Furthermore, data are presented which reveal that the climate effects on college plans and math achievement persist when students' academic values (as measured by the intellectualism scale) are controlled. This finding clearly demonstrates that the prevalent academic atmosphere of the school exerts an influence on these two attributes independent of students' internalized intellectual orientations, thus satisfying the most fundamental requirement of contextual analysis--that the relationships between the contextual measure and the dependent variable must be maintained while the closely related characteristic of individuals is controlled.

The magnitude of the climate effects is comparable for educational plans and mathematics achievement and generally lower for intellectual values. Evidence from this study and from earlier research indicates that the weaker effects of the various climate dimensions and personal and background characteristics on intellectual values are plausibly explained in terms of intellectualism being less salient for students than either college attendence or academic achievement because it is less stressed or emphasized at all levels of the educational system, in the larger society, and in the home backgrounds of most students.

In an attempt to further understand intellectual values for the present sample of adolescents, a number of personal and background characteristics associated with the attribute were isolated. These characteristics produced a profile of the intellectual student similar to that of the creative student described by Getzels and Jackson (1960) and Holland (1961) and the achievement-oriented student portrayed by Strodbeck (1958) and Elder (1965). Specifically, the inference is drawn that the intellectual student is more likely than the non-intellectual to have career aspirations reflecting creativity; to hold collegiate values defining college success in terms of original and creative achievement; to spend his leisure time in intellectual pursuits; to have esthetic tastes and values; to be academically oriented toward school; to come from an intellectual home environment; and to be independent of parents and peers.

As noted at the beginning of this section, the effects of the various dimensions of the educational and social climates of the schools are consistently in the expected direction but not of a high order of magnitude. It is difficult, for a number of reasons, to make direct comparisons of the degree of relationship between the climate variables and the dependent attributes presented here with those of earlier research in this area.

First, there has been a tendency in earlier studies to focus on educational or occupational aspirations as the dependent variables, instead of rigorous measures of achievement and/or intellectual values. Secondly, the average socio-economic composition of the school has often been used as the measure of educational climate, not the direct and comprehensive indicators of the normative influence perceived by students and faculty which were developed in this study.[48] Furthermore, earlier studies have not controlled simultaneously the large number of relevant personal and background characteristics which have been accomplished in the present study. Consequently, it is difficult to determine whether the putative climate effects shown in earlier studies are valid or merely a function of uncontrolled variation in personal and background characteristics which are known to be highly associated with educational aspirations and plans and academic performance.

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[48] Both of these points hold true for each of the following studies: Wilson (1959), Ramsøy (1961), Michael (1961), Turner (1964), and Boyle (1966). Recent research by Sewell and Armer (1966) and results to be presented later in this report seriously question the adequacy of SES context as a measure of the educational climate of the school. Coleman's study (1961) is an exception in that he measured student value climates in relation to achievement. A second exception is Gordon's intensive study (1957) of a single school. However, neither Gordon nor Coleman had available a precise measure of achievement which was comparable across schools.

There is, however, one recent piece of educational research conducted at the national level by Coleman, et al. (1966) which does provide a baseline with which the results of the present study can be compared because of the rigorous methodology it employed. Jencks (1966), in his review of Coleman's study, makes the unqualified statement that it is the most important educational study conducted in recent years. The survey was conducted under the auspices of the National Center for Educational Statistics of the U. S. Office of Education and had as its purpose the determination of the availability of educational opportunities for individuals of varying social backgrounds in public educational institutions at all levels in the U. S. In the survey, data from a number of sources were collected on more than 500,000 students and 60,000 teachers in approximately 4,000 schools across the country. The important point of the survey, as it relates to the present study, is the information it provides on the effects of numerous school characteristics on the achievement level of individual students of varying social and ethnic backgrounds as measured by standardized tests in a number of subject areas such as verbal and nonverbal ability, reading, mathematics, and general information.[49] The primary criterion of achievement used throughout most of the examination of school effects was a vocabulary test measuring verbal ability.[50]

Two important results from the Coleman survey which provide support for the findings of the present study should be emphasized here:

(1) Most of the variation between students in achievement was not accounted for by school factors or characteristics. Thus, despite the great diversity of school facilities, curricula, and faculties, the variation in achievement between pupils within the same school was approximately four times as great as the variation between schools.[51]

(2) A large part of the variation in individual achievement was accounted for by family background differences.

An inspection of the tables in this chapter leads to the same result as that of Coleman: family background and personal characteristics exert more independent influence on the academic performance of students than does the school.

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[49] The results cited here are found in Chapter 3 of the Coleman report.

[50] This decision was made because scores on ability tests used in the research (similar to "intelligence" tests ordinarily used in schools as measures of a child's capacity to learn) were discovered to be as much affected by school characteristics as scores on achievement tests. Thus, Coleman argued, the verbal ability test (which also showed the highest correlation with other standardized tests such as mathematics achievement) provided a rigorous index of the school's effectiveness on students' learning.

[51] However, one of the school factors which did provide a facilitating effect upon the achievement level of individual students with family background characteristics controlled was the educational aspirations of other students (as measured by the proportion of students with college plans). This variable is clearly a climate attribute as defined in the present analysis and provides independent support for the climate effects on students' math performance.

Despite this fact, however, the climate effects are of substantive significance in light of the fact that for each of the three dependent attributes at least 50 percent of their variation is unaccounted for by personal and family background characteristics which systematically have been shown to be the most important in predicting academic achievement and college aspirations and/or plans. Furthermore, the comprehensiveness and adequacy of the measures of the various dimensions of school climate and the statistical technique employed have greatly decreased the likelihood of obtaining spurious contextual effects (i.e., statistical artifacts)--a problem which has plagued earlier researchers in the type of research presented in this report.

Based on the mass of data presented in this chapter, it is concluded that the individual's academic behavior is influenced not only by the motivating force of his home environment, scholastic ability, and value orientations, but also by the pressures applied by other participants in the school setting. More specifically, in those schools where academic competition, achievement, intellectualism and subject-matter competence are demonstrated and emphasized by faculty and other students (both at the global and more immediate, interpersonal levels) individual students tend to adopt these scholastic norms, resulting in higher achievement, educational aspirations, and intellectual values on their part.

The analysis of the relationship of student status systems to academic achievement conducted at the school level in the present chapter has produced negligible results. Given the wide acceptance of the importance of these systems for the academic behavior of students, this line of inquiry will be pursued further in the next chapter. Specifically, the chapter will be devoted to an examination of (1) the effects of the student's status in school on his academic behavior and (2) the relation of the content of student body norms for prestige to the dependent attributes.

Chapter VI

THE EFFECTS OF STATUS ON ACADEMIC BEHAVIOR AND THEIR RELATION TO NORMATIVE CLIMATES OF SCHOOLS

Introduction

The major thesis of Coleman's (1961) monograph on adolescent subcultures is that the fundamental competition in a high school is for recognition and respect in the eyes of one's fellows and the opposite sex (p. 143):

> "Competition for scholastic or athletic honors, as well as competition in other activities, is important to the competitors, not on its own account, but because it helps win status in the eyes of other teen-agers. To be sure, winning recognition and respect in the eyes of parents is important, too, to most teen-agers; but preceding chapters have indicated its decreasing importance, and its increasing replacement, in the adolescent's scheme of things, by recognition and respect from his peers."

The widespread currency of Coleman's thesis and the importance of the implications of the thesis if it describes reality (see Chapter IX of his monograph for an extended discussion of the implications of the high school status system as he sees them) demands that it be re-examined carefully in additional schools to test its generality. The purpose of this chapter is to examine the relationships between status and academic behavior on the individual level and the implications for these relationships of the normative climates of schools--the contexts within which status affects academic behavior.

The Measures of Status in the School Social System

Two measures of status in school will be considered here--for a subset of nine schools, the number of same sex leading crowd choices received (see Question 113a of the student questionnaire) and for all twenty schools, a subjective measure, the response to the question: Would you say you are part of the leading crowd in this school? (Question 114 of the student questionnaire.) Data for leading crowd choices are not available for all twenty schools because financial and time considerations did not permit the coding of sociometric responses for all schools. The nine schools for which sociometric data were coded are not to be taken as representative of all U.S. high schools or even of the twenty schools in this sample. The nine schools were purposively selected to insure variation on the six climate dimensions and also because they represent the schools where most of the Negroes in the total sample attended. (See Chapters I and II for a discussion of the extension of the study to include a comparison of climate effects on the academic behavior of Negroes and whites.)

Students receiving two or more leading crowd choices are designated as "being in the leading crowd." The primary reason for using this cutting point is that the focus here is on the effect of status on academic behavior, and since other individual attributes must be held constant to obtain reliable estimates of this effect, it is necessary to have a sufficient number of respondents in the high status category. It goes without saying that for the concept "leading crowd" to be meaningful, only a relatively small proportion of the school population can be included in it. This definition corresponds to those Coleman specified as being "intermediate elites" (2-9 choices), plus those he called the "top elites" (10 or more choices) (Coleman, 1961, p. 102).[1] Table VI-1 gives the percent of the student body in each school classified as having high status by this criterion.

The subjective measure of high school status is dichotomized "yes" vs. all other responses. Intuitively, this status measure is less appealing than the more objective leading crowd choices measure. A student's self-confidence and idiosyncratic perceptual distortions are more likely to influence the response to this item than responses to the item asking for the names of those in the leading crowd. In any case, as a glance at Table VI-1 shows, more people are put into the high status group via categorization on Q. 114 than by the number of leading crowd choices received.

It should be stressed again that no attempt is being made to isolate the few social elites in each school but rather to determine the effect of status in school on academic behavior. To do this it is necessary to develop measures of the adolescent "class" structure (which is related to, but by no means is wholly determined by, the adult class structure of the larger community).

The two measures show a reasonable degree of correspondence. In the right-hand columns of Table VI-1, the correlation between the indicators as measured by the phi coefficient (expressed as a proportion of its maximum value with given marginals) is presented by sex and school. Most of the non-correspondence of classification between the two measures occurs in the cell containing those students who receive zero or one leading crowd choice but say they are in the leading crowd.[2] On the average, the number of cases in this cell is about twice the number in the other deviant cell--those saying they are not in the leading crowd, but who receive two or more leading crowd nominations.

The status measures are about equally related to ability level and father's education. (See Table VI-2.) The discrepancy in each category of ability level and father's education between the two status measures reflects the approximately seven percent discrepancy in the proportion of students classified as being "high status" by the two indicators.

Figures VI-1 and VI-2 give some insight into the degree of ascriptiveness of the status systems of schools. Figure VI-1 shows the proportion of boys in each school whose fathers have at least some college education (the horizontal

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[1] It should be pointed out that a person could name himself as being in the leading crowd. Taking the criteria for high status as two or more choices insures that high status students were named by at least one person other than themselves. Correlations between the status measures were computed with leading crowd choices broken zero versus one or more. The relationships were uniformly lower than those shown in Table VI-1 where the criterion for leading crowd choices is zero and one versus two or more.

[2] No examination will be made here of the differences between students whose self-reported status is congruent with peer nominations and those whose self-reported status is incongruent with them.

TABLE VI-1

PERCENT OF THE STUDENT BODY CLASSIFIED AS "HIGH STATUS" FOR TWO STATUS CRITERIA BY SEX AND SCHOOL

	Percent Receiving Two or More Leading Crowd Choices			Percent Saying "Yes" to Question 114			Correlation (Phi/Phi Max.) Between Status Measures		
School	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1	25.5	25.3	25.4	32.4	35.9	34.2	.52	.63	.57
2	a	a	a	32.8	30.2	31.5	a	a	a
3	21.1	18.2	19.7	30.6	26.8	28.8	.48	.53	.51
4	a	a	a	27.1	22.6	24.9	a	a	a
5	15.3	14.4	14.8	27.0	22.6	24.9	.48	.52	.50
6	a	a	a	27.1	21.0	24.0	a	a	a
7	27.1	30.6	28.8	36.0	37.5	36.7	.44	.39	.41
8	a	a	a	24.9	17.9	20.9	a	a	a
9	23.8	27.0	25.4	39.3	26.5	32.9	.42	.35	.37
10	a	a	a	32.0	26.3	29.1	a	a	a
11	a	a	a	27.6	24.0	25.8	a	a	a
12	a	a	a	33.5	33.3	33.5	a	a	a
13	a	a	a	34.5	35.5	35.0	a	a	a
14	24.0	23.5	23.7	33.1	30.5	31.9	.57	.57	.57
15	25.2	22.0	23.5	34.8	27.3	30.9	.53	.57	.55
16	a	a	a	34.4	25.5	29.9	a	a	a
17	17.5	18.9	18.2	28.0	25.3	26.7	.53	.66	.60
18	a	a	a	31.6	27.4	29.9	a	a	a
19	a	a	a	36.8	35.9	36.4	a	a	a
20	26.3	22.6	24.4	39.5	29.8	34.5	.47	.68	.58
All	21.8	21.6	21.7	30.6	26.3	28.5			

[a] Sociometric data were not coded and tabulated for these schools.

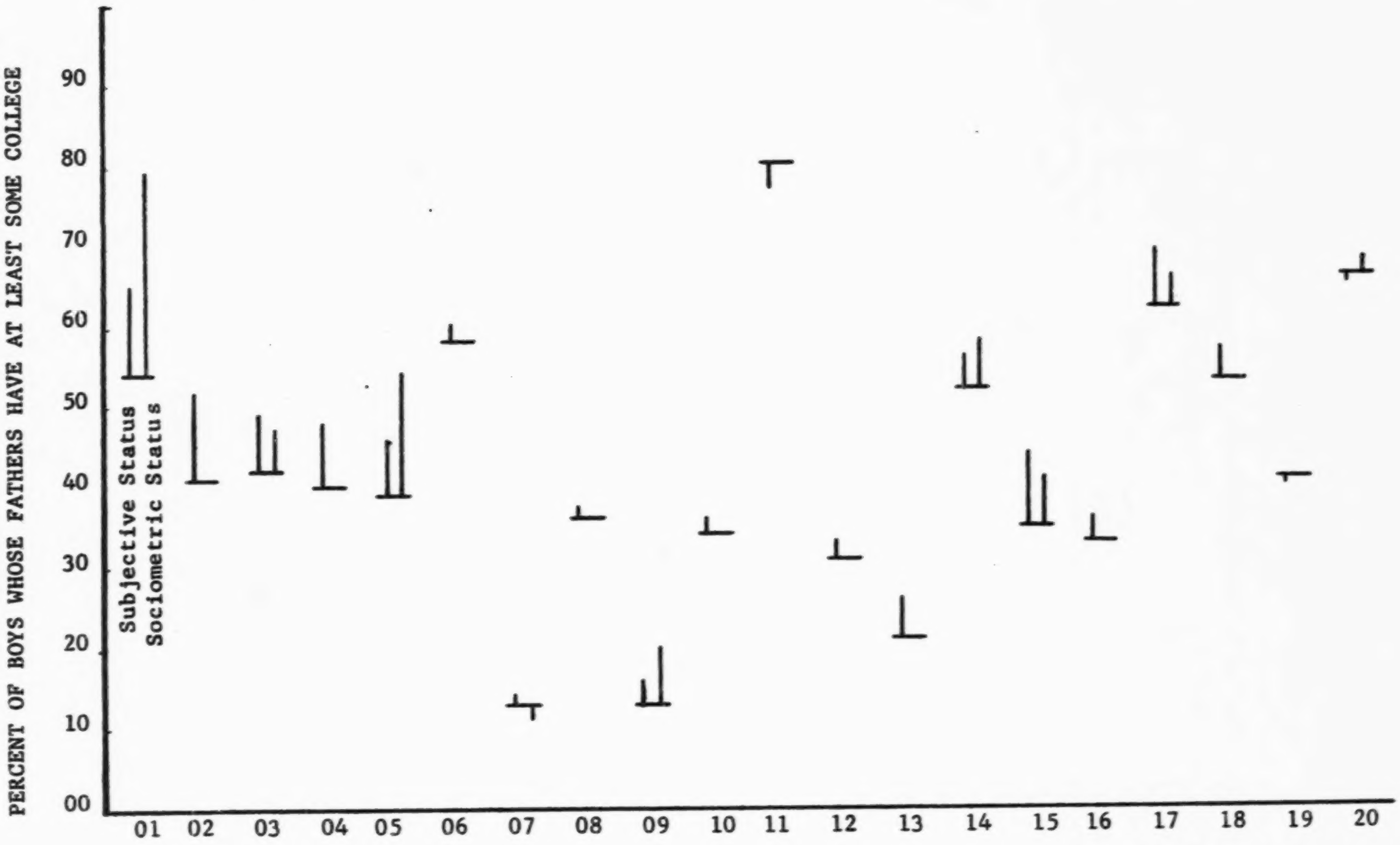

FIGURE VI-1 - PERCENT OF BOYS WHOSE FATHERS HAVE AT LEAST SOME COLLEGE EDUCATION FOR ALL BOYS AND FOR HIGH STATUS BOYS (FOR BOTH CRITERIA WHERE RELEVANT) BY SCHOOL

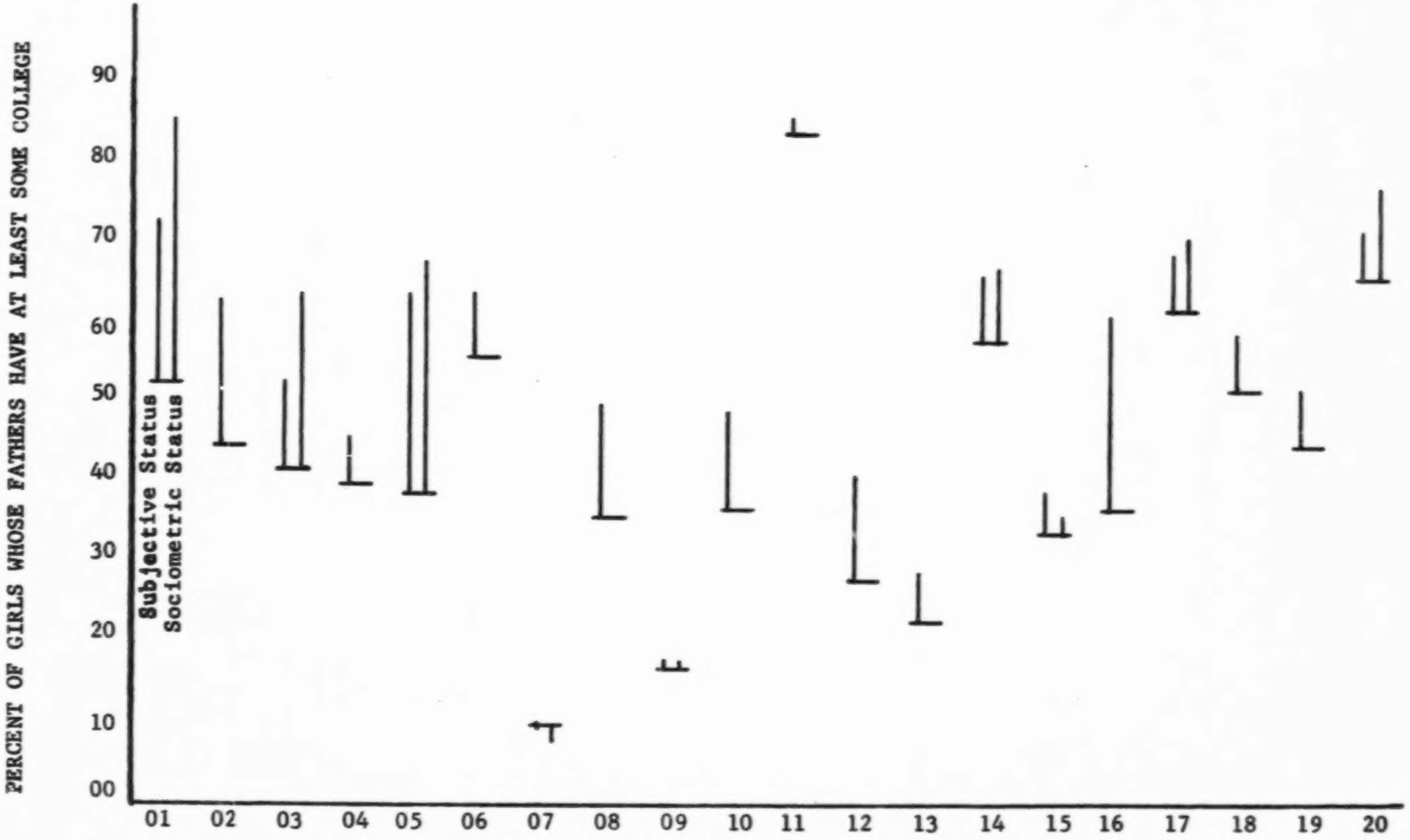

FIGURE VI-2 - PERCENT OF GIRLS WHOSE FATHERS HAVE AT LEAST SOME COLLEGE EDUCATION FOR ALL GIRLS AND FOR HIGH STATUS GIRLS (FOR BOTH CRITERIA WHERE RELEVANT) BY SCHOOL

TABLE VI-2

PERCENT OF STUDENTS RECEIVING TWO OR MORE LEADING CROWD CHOICES AND PERCENT PLACING THEMSELVES IN THE LEADING CROWD BY ABILITY LEVEL AND BY FATHER'S EDUCATION

Status Measure	Ability Level low 1	 2	 3	 high 4	Unweighted Effect Estimates Standardized to Dichotomous Form
Percent with 2+ choices	19.6	22.0	22.5	24.3	.032 ($.01 > p$)
Number of Cases	(2657)	(1742)	(1634)	(1911)	
Percent Placing Selves	27.6	29.2	28.2	29.3	.012 ($p > .05$)
Number of Cases	(5942)	(4307)	(4024)	(4563)	
	Father's Education low 1	 2	 3	 high 4	
Percent with 2+ choices	18.0	20.7	21.1	27.7	.064 ($.01 > p$)
Number of Cases	(2427)	(2193)	(1156)	(2366)	
Percent Placing Selves	24.0	28.4	29.4	33.7	.064 ($.01 > p$)
Number of Cases	(5239)	(5095)	(2882)	(5803)	

line) and the proportion of self-designated high status boys whose fathers have at least some college education (the vertical line). In the schools where it is relevant, vertical lines are shown also for high status as determined by leading crowd choices. Figure VI-2 gives the same information for girls. It can be seen by comparing these figures that a girl of high status is somewhat more likely than a boy of high status to come from a family where the father has some college training. Furthermore, in every school except number 07, girls of high status are more likely to have fathers who completed some college education than their female schoolmates as a whole. The same is generally true for boys, with Schools 07, 11, 19, and 20 being exceptions or instances where the status measures give contradictory results.

As will be shown later in the chapter, the substantive conclusions to be drawn about the effects of status in the school social system on academic behavior are the same for both status measures. Nevertheless, it seems appropriate to present some results for both indicators, since they are differently conceived.

Implications of Status for Academic Behavior

The findings of recent research directed toward assessing the influence of the adolescent status system on academic behavior have been somewhat paradoxical. Coleman (1961) found that students of high status made better grades, valued grades less, planned at a higher rate to go to college, and were less receptive to being remembered as a "brilliant student." In short, high status students valued academic success less, but performed better both in terms of grades and desire to further their education in college. McDill and Coleman (1963), analyzing data from six of the ten schools covered in Coleman's earlier monograph, found a positive relationship between high school social status and college plans, a relationship which increased from the students' freshman to their senior years. A negative relationship between status and achievement orientation (desire to be remembered in school as a "brilliant student") was obtained. This relationship decreased very slightly from freshman to senior year. In a subsequent article using the same data to examine the relative impact of family background and high school status on college plans, they (1965) demonstrated that the effect of status, though smaller than that of family background in the freshman year, increased to a level beyond that of family background by the senior year. Their interpretation of this result is that students in high status cliques in the freshman year, in which a majority of the members at this point had college plans, socialized those clique members without college plans to the importance of such plans for future financial, social, and occupational success. Conversely, among members of low status cliques, less value was placed on college attendance and socialization was seen as being away from college plans.

Other than the aforementioned studies, little attention has been paid to the effects of status in the high school social system on academic behavior. Rather, researchers concerned with status have tended to focus on student status as determined by family position in the community, e.g., see Hollingshead (1949). A general bias in grading in favor of middle-class students has been noted by some researchers (Reiss and Rhodes, 1959, p. IV-104; Hollingshead, 1949). Given the higher rate of extra-curricular participation by high status students, it would not be surprising to find they did somewhat better in school, insofar as schools have some minimum achievement standard expected of students who are active in school organizations (e.g., maintaining a "B" average to hold an office in school government). High status students may be "more select" in this sense. Gordon (1957) observed that status and year in school were associated with sophistication in manipulating teachers to obtain grades "adequate" to sustain participation in school activities at a level to which individual students aspired.

Turning to the present data, Tables VI-3 and VI-4 give the zero-order relations between the two status measures and the dependent variables. As the reader will see, the basic relationships here are in the same direction as those found by McDill and Coleman. High status students are more likely to have college plans, score high on the math achievement test, and less likely to have a high value on the personal orientation toward intellectualism scale. It should be emphasized that the higher level of mathematics achievement for high status students, though not large, is meaningful since there is no possibility of performance ascription; that is, teachers' judgments and social class biases cannot affect the assignment of achievement level on this test, as they have been shown to influence assignment of grades in classroom work in some instances.

TABLE VI-3

ZERO-ORDER RELATIONSHIPS BETWEEN LEADING CROWD CHOICES RECEIVED AND THREE DEPENDENT ATTRIBUTES

Dependent Attributes	Zero or One Leading Crowd Choice	Two or More Leading Crowd Choices	Unweighted Effect Estimates of Status
% With College Plans	54.0	67.3	.133 (.01 > p)
Number of Cases	(6605)	(1844)	
% With Math C Score ≥ 5	49.5	58.3	.088 (.01 > p)
Number of Cases	(6208)	(1736)	
% Scoring ≥ 3 on P.O.T.I.	47.3	43.9	-.034 (.05 > p)
Number of Cases	(6651)	(1844)	

TABLE VI-4

ZERO-ORDER RELATIONSHIPS BETWEEN RESPONDENTS' EVALUATION OF THEIR OWN STATUS AND THREE DEPENDENT ATTRIBUTES

Dependent Attributes	Does Not Claim Membership in Leading Crowd	Claims Membership in Leading Crowd	Unweighted Effect Estimates of Status
% With College Plans	55.3	67.5	.122 (.01 > p)
Number of Cases	(14,148)	(5,668)	
% With Math C Score ≥ 5	51.1	53.7	.026 (.01 > p)
Number of Cases	(13,472)	(5,364)	
% Scoring ≥ 3 on P.O.T.I.	49.2	43.0	-.062 (.01 > p)
Number of Cases	(14,213)	(5,686)	

Since family background and ability level are somewhat related to status in the school social system and are highly related to college plans and mathematics achievement, the relationships just presented must be qualified by the consideration of these characteristics along with status. In order to preserve the stability of the estimates of effects in later school-by-school analysis, the characteristic most strongly related to the particular dependent attribute--family background for college plans and ability level for mathematics achievement and intellectual orientation--will be controlled. To provide a consistent comparison with that of school-by-school presentation, the controls for aggregate presentation will be the same.

Table VI-5[3] presents the relevant data for college plans for both measures of status with father's education controlled. The relationship with college plans persists with family background controlled. Uniformly, for each level of father's education, high status students are more likely to have college intentions than low status students. McDill's and Coleman's (1965) contention that an ascriptive process defined the composition of high status cliques with a socialization process inculcating the value of college attendance in those high status clique members not previously expressing college plans, does not throw light on why, for each level of father's education, high status students are more likely to have college plans. It may well be that high status is as much a consequence of college plans as a cause. In the panel analysis (1963), employing a continuous-time Markov model designed to assess over-time movement between discrete positions on attributes, they found that:

1) Those with positive college plans were more likely to move into the leading crowd than those with negative plans.
2) Those with negative college plans were more likely to move out of the leading crowd than those with positive plans.
3) Those in the leading crowd but without positive college plans were more likely to formulate such plans than non-leading crowd members.
4) Those outside the leading crowd who had college intentions were more likely to abandon such plans than those in the leading crowd.

The present data, while not providing an additional test of these ideas, are consistent with them.

High status students in the twenty schools are more likely than others to say most or all of their friends have college plans (76.6% as opposed to 64.2%). Since this indicator of peer group influence was shown in the last chapter to be strongly related to individuals' college intentions, it is introduced in Table VI-6 to further specify the relationships of status and family background to college attendance aspirations. Peer group influence again operates most strongly to encourage the development of aspirations to attend college. Undoubtedly, the processes by which peer group influence operates on the educational

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[3] The measures of relationship used in this chapter are the same as those used in earlier chapters. In most of the tables presented in this chapter, the arrangement of the data precludes placing the effect parameters in a column of the table so that they correspond in an orderly fashion to the independent variables whose effects they measure. When this is the case, the summary effect parameters are given at the bottom of the table and labeled in the following manner: a_i = .xxx .xx $>$ p variable i where the $\underline{i}$ refers to a particular independent variable. (See the section of Chapter III entitled "The Statistical Procedure.")

TABLE VI-5

PERCENT WITH COLLEGE PLANS FOR TWO MEASURES OF STATUS IN SCHOOL WITH FATHER'S EDUCATION CONTROLLED

Subjective Status

Status		Father's Education low 1	2	3	high 4
Low Status	%	35.7	52.6	66.4	76.2
	N	(3984)	(3647)	(2034)	(3847)
High Status	%	48.0	61.7	73.6	83.9
	N	(1255)	(1448)	(848)	(1956)

a_1 = .268 $(.01 > p)$ Father's Education
a_2 = .091 $(.01 > p)$ Status

Sociometric Status

Status		Father's Education low 1	2	3	high 4
Low Status	%	31.9	50.3	65.9	80.9
	N	(1989)	(1743)	(912)	(1711)
High Status	%	39.5	60.2	78.3	89.0
	N	(438)	(455)	(244)	(655)

a_1 = .334 $(.01 > p)$ Father's Education
a_2 = .090 $(.01 > p)$ Status

decision-making process are multi-faceted and complex. Part of this relationship may be accounted for by selective association; for example, students in a college preparatory program are more likely to have friends in the same program than in a vocational or commercial program and vice versa. On the other hand, students without firm college plans, in their association with those intending to go to college, undoubtedly are subjected to social pressures which enhance the salience of a college education as the most attractive and, perhaps, most available of the alternative endeavors open to young people as they approach the end of their high school careers.

It can be seen in Table VI-6 that status continues to make a small but significant contribution to the explanation of college plans. Just what the

TABLE VI-6

PERCENT WITH COLLEGE PLANS BY FATHER'S EDUCATION, FRIENDS' COLLEGE PLANS AND SUBJECTIVE STATUS FOR ALL SCHOOLS

		None, Few, or Some Friends Going to College		Most or all Friends Going to College	
Father's Education		Low Status	High Status	Low Status	High Status
1 (low)	%	16.7	18.8	61.4	71.3
	N	(2196)	(528)	(1705)	(698)
2	%	23.6	26.6	72.1	75.3
	N	(1386)	(383)	(2181)	(1042)
3	%	37.2	28.1	77.3	82.8
	N	(508)	(139)	(1489)	(699)
4 (high)	%	41.5	56.0	84.0	87.8
	N	(646)	(218)	(3135)	(1720)

$a_1 = .149$ $(.01 > p)$ Father's Education
$a_2 = .046$ $(.01 > p)$ Status
$a_3 = .454$ $(.01 > p)$ Friends' Plans

dynamics of this phenomenon are, whether status be the cause or effect, are not clear. However, the earlier over-time data of McDill and Coleman (1963) suggest a two-way causal process, and the present data are certainly not inconsistent with such an explanation.

One final idea will be considered here. It is not unreasonable to assume that, other things being equal, those students who receive more of the rewards and benefits of high school and who find high school interesting and enjoyable will be more likely to think favorably about continuing their educational experience than unrewarded and discontented students. Table VI-7 presents the reaction of students from the nine schools with sociometric data to a question designed to assess their overall satisfaction with their high school experience. As one would expect, high status students report their high school experience to be "fun and exciting" or "interesting" more frequently than low status students (about 70% as opposed to about 55%). Seeing the high school experience as being generally rewarding may be one of the many phenomena which contribute to the development of college plans and may form part of the explanation for the higher rate of college intentions among high status students.

Table VI-8 presents the relationships between mathematics achievement and the two measures of status with ability level controlled. Status as measured

TABLE VI-7

PERCENT OF STUDENTS GIVING VARIOUS RESPONSES TO QUESTION DEALING WITH SOCIAL AND INTELLECTUAL STIMULATION IN THEIR HIGH SCHOOL EXPERIENCE BY STATUS IN SCHOOL, FOR NINE SCHOOLS[a]

Response		Low Status[b]	High Status[b]	Total
Filled with Fun and Excitement	%	22.3	36.8	25.4
	N	(1396)	(634)	(2030)
Interesting and Filled with Work	%	32.4	33.9	32.7
	N	(2034)	(584)	(2618)
Fairly Pleasant	%	33.1	22.5	30.8
	N	(2075)	(388)	(2463)
Somewhat Dull	%	8.4	5.0	7.6
	N	(524)	(87)	(611)
Unhappy	%	3.9	1.9	3.4
	N	(242)	(32)	(274)

[a] Responses are to Question 137 in the student questionnaire in Appendix A.

[b] Status is measured here by number of leading crowd choices received, two or more choices received being defined as "high status."

by leading crowd choices has a larger effect on mathematics achievement than does the subjective status measure. Apart from the fact that status measured by leading crowd choices is slightly more related to mathematics achievement than the subjective measure, status is slightly more highly related to achievement in the nine schools for which the sociometric data are available. Even the subjective status indicator is slightly more related to mathematics test score in these nine schools.[4] School-by-school results will be presented later in the chapter with some suggestions for why status may be related to academic behavior differently in various schools. The discussion and elaboration here will be focussed on the subjective measure of status since it is available for all schools.

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[4] Percent high on mathematics achievement for low and high status students (by the subjective measure) for nine schools is, respectively: 50.1 and 54.5. Compare the effect parameter for this relationship, .044, with those for status on mathematics achievement given in Tables VI-3 and VI-4.

TABLE VI-8

PERCENT SCORING HIGH ON MATHEMATICS TEST FOR TWO MEASURES OF STATUS WITH ABILITY CONTROLLED

Subjective Status
Ability Level

Status		low 1	2	3	high 4
Low Status	%	25.0	51.0	61.5	76.7
	N	(4304)	(3049)	(2891)	(3228)
High Status	%	26.3	53.5	62.7	80.2
	N	(1638)	(1258)	(1133)	(1335)

$a_1 = .360$ $(.01 > p)$ Ability

$a_2 = .021$ $(.01 > p)$ Status

Sociometric Status
Ability Level

Status		low 1	2	3	high 4
Low Status	%	23.4	48.3	62.1	78.1
	N	(2137)	(1359)	(1266)	(1446)
High Status	%	30.0	56.4	68.2	83.7
	N	(520)	(383)	(368)	(465)

$a_1 = .374$ $(.01 > p)$ Ability

$a_2 = .066$ $(.01 > p)$ Status

As is the case with college plans, little research has been done on the relationship between social status in the high school and achievement. Most research concerned with this area has dealt with status in the larger community (i.e., family background as measured by father's occupation or one or both parents' educational attainment) rather than the student's status in the school social system. See, for example, the findings of Reiss and Rhodes (1959).

Ryan and Davie (1958, p. 10) cite four studies conducted at the primary school level which found small positive relationships "between measures of social acceptance and both academic achievement and intelligence." In their own research on a single high school, Ryan and Davie found a positive, though small, relationship between students' social acceptance (average popularity rating given by grade peers) and grades averaged over the academic year. They did not try to explain the relationship beyond noting several possible causal connections: " . . . that a student needs a certain amount of acceptance by his peers to function satisfactorily. ...that good academic performance in itself may gain a certain amount of prestige..." And that other, unmeasured, traits may operate to effect both good academic performance and group acceptance, with social acceptance merely expressing the underlying variable that does produce good grades.

Lavin (1965, p. 136) cites two studies which report a relationship between social acceptance and academic performance at the elementary school level. In both studies the relationship disappeared when intelligence was controlled. He suggested (p. 137) the relationship may be a function of teacher attitudes--that peer norms regarding achievement in school may reflect teacher expectations (and values, one might add). If teachers seem to value and reward achievement, the high achievers' peers may do likewise. The values of high school students are less likely to be a function of teacher attitudes, however, since research such as that of Coleman (1961) has shown adolescent values are relatively independent of adult values in general. It does seem worthwhile to introduce a measure of peer group values toward the utility of academic achievement for status in order to further specify the relationship between status and achievement.

Table VI-9 presents the data for an examination of the relationships of status and the importance of grades for popularity among one's peer group (Question 71 of the student questionnaire) with achievement. Overall, status exerts (in a methodological sense, not necessarily a causal sense) a very small effect independent of ability level and peer group evaluation of the importance of grades. The effect of the index of peer group influence on mathematics achievement is larger than that of status. That status and importance of grades for popularity contribute independently to the explanation of math achievement offers some evidence that status does not accrue to high achievers solely as a consequence of a positive value students' peer groups place on achievement. One would have cause to be surprised if this were the case, in fact. As was pointed out in the previous chapter, the relative ranking of the importance for status in school of six items tapping the value content of the status system placed getting high grades behind athletic prowess (being a cheerleader for girls), leadership in activities, and having a nice car (clothes for girls) in nineteen of the twenty schools. The conclusion pointed to is that although rewards for academic achievement form part of the total cultural system in high schools, the part these rewards play is small relative to the role of other, less intellectual- or achievement-directed, rewards.

In summary, any conclusions about the direction of causality for the small relationship between status and performance on the mathematics test must remain tenuous. The relationship cannot be attributed to the correlation between ability and status, since ability level is controlled in these tabulations. Whether the difference in performance between high status and low status students be accounted for by personality differences such as greater confidence or higher achievement motivation on the part of elites cannot be determined here. Nor can it be determined whether the slight effect reflects a causal process in the other direction, i.e., that status, to a relatively minor degree, does accrue to high achievers.

TABLE VI-9

PERCENT SCORING HIGH ON THE MATHEMATICS ACHIEVEMENT TEST BY SUBJECTIVE STATUS, ABILITY LEVEL, AND IMPORTANCE OF GRADES FOR POPULARITY AMONG ONE'S PEER GROUP

		Grades Not Important		Grades Important	
Ability Level		Low Status	High Status	Low Status	High Status
1 (low)	%	22.4	22.5	30.5	36.4
	N	(2901)	(1140)	(1349)	(478)
2	%	47.9	51.4	58.1	57.6
	N	(2083)	(880)	(940)	(375)
3	%	58.2	58.6	68.8	71.2
	N	(1928)	(752)	(941)	(378)
4 (high)	%	73.2	76.7	82.8	86.9
	N	(2006)	(873)	(1208)	(459)

$a_1 = .356$ $(.01 > p)$ Ability

$a_2 = .022$ $(.01 > p)$ Status

$a_3 = .099$ $(.01 > p)$ Importance of Grades

The remaining aspect of academic behavior being considered here, personal orientation toward intellectualism, is related to status in a manner seemingly contradictory to the relationships achievement and future educational aspirations have with status. A smaller proportion of high status students have a high degree of commitment to intellectualism than low status students. Thus, in spite of the quite substantial relationship between intellectualism and achievement and intellectualism and college attendance plans on the one hand, and the moderate relationships between status and these two aspects of academic behavior on the other hand, status and intellectualism are negatively related. This set of relationships, at least on the surface, violates the precepts of balance theory. Or as Boocock (1966, p. 28) has said of similar findings in Coleman's work (1961), "...the findings are inconsistent with consistency theory."

Ability level is the independent attribute most strongly related to personal orientation toward intellectualism. It is introduced as a control variable in Table VI-10 to further examine the relationship between intellectualism and status. As can be seen there, the negative relationship still exists. Ability accounts for slightly more of the variation in intellectualism than status does $(.100 > -.061)$.

TABLE VI-10

PERCENT HIGH ON PERSONAL ORIENTATION TOWARD INTELLECTUALISM BY ABILITY LEVEL AND SUBJECTIVE STATUS

	Ability Level			
Status	low 1	2	3	high 4
Low Status	42.8 (4250)	47.3 (3023)	52.1 (2891)	57.6 (3214)
High Status	36.6 (1618)	40.7 (1255)	45.6 (1130)	52.6 (1332)

$a_1 = .100$ $(.01 > p)$ Ability
$a_2 = -.061$ $(.01 > p)$ Status

Again the question of causality must be raised regarding the relationship between status and personal orientation toward intellectualism. If it were the case that high school students were faced with a choice, whether conscious or unconscious, between investing their resources and energy in the intellectual-scholastic activities or the social-extracurricular activities of the school, with the result that their values reflected this investment and that their status was high or low depending on their social or scholastic bents, then one would expect the performance aspects of students' behavior to likewise reflect the investment. This description does not fit the results given here, nor the results reported by Coleman (1961) and McDill and Coleman (1963). Undoubtedly, each of the dependent attributes promotes the others to some extent. That is, high achievement brings personal and interpersonal forces to bear on students to give consideration to college attendance, and a desire or intention to attend college spurs one to work harder in order to attain adequate preparation for college. Having college plans and being a high achiever exposes one to the idea that knowledge is worthy of value in its own right, and valuing knowledge for its own sake stimulates achievement and a desire to attend college for a segment of high school students. That the link from achievement and college plans to the development of an intrinsic value for knowledge--intellectualism--is the weakest link in this complex, triangular chain is evident from the present results and from the McDill and Coleman results (1963). While this configuration of relationships seems to hold for the students as a whole, it clearly does not for an important subgroup, namely, high status students. A force which is equally important, or perhaps more important than an intrinsic value for knowledge in motivating achievement and college attendance is the desire to "get ahead in life." This may be coupled with nothing more than a tolerance of, and discipline for, scholastic activities for many students. It is possible that this type of motivation has special application for high status students, who in one sense may be the most socially sophisticated of students --sophisticated in the sense of knowing how to "beat the system." That is, these "sophisticates" realize that the most important criterion of success is a college diploma, not a college education.[5] In contrast, the type of student for whom achievement and college aspirations are a function of intellectual commitment is one whose family background is conducive to such an orientation and whose peer associates are tolerant or supportive of such a perspective.[6]

Unfortunately, no index of peer group influence on intellectualism comparable to friends' plans for college and importance of "getting good grades" for popularity among peers is available in the present data. A possible measure would be the average personal orientation toward intellectualism scale scores for persons chosen as friends by a respondent. If the respondent were then characterized as being in a friendship group with a high or low average scale score, the resulting attribute would measure peer group influence on intellectualism in a manner parallel to the way peer group influence on college plans is measured by the question on friends' college plans. The enormity of the data processing task plus the lack of sociometric data for eleven of the twenty schools precludes constructing this measure for the present research. However, since part of the content of the intellectualism scale taps a personal concern for the quality of one's academic performance, it is not inappropriate to take as an indicator of peer group influence on intellectualism the item used to measure interpersonal influence on grades. Therefore, in Table VI-11 the importance of "getting good grades" for popularity among one's peer group is introduced with status and ability level to further examine the relation of status to intellectualism. It can be seen there, that within each status group, students reporting that good grades are important for popularity among their friends (notice this is not in the school social system as a whole) are much more likely to have high values on the intellectualism scale than students of similar status reporting no such peer group value. There remains a discrepancy between high status and low status students with regard to intellectualism, even with peer group influence controlled. The magnitude of the effect of peer group influence on personal orientation toward intellectualism relative to that of status suggests that interpersonal influences on the immediate peer group level are considerably more important in determining academic behavior and values than are subcultural values (i.e., school level values which determine the criteria for status in the student social system).

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[5] McDill and Coleman (1963, p. 918) suggest an alternative explanation for the motivation of high status students. It is that college offers the opportunity for expanded social freedom and social activities with less parental control than most students experience in their high school years. They conclude: "Thus socialization by a set of peers, unless those peers be themselves scholastically oriented, is likely to be away from scholastic achievement orientation while at the same time toward college." There is no inconsistency between this explanation and the one given above. Most likely both operate to some extent among non-intellectually motivated students.

[6] For data supporting this position see Table V-11.

TABLE VI-11

PERCENT HIGH ON PERSONAL ORIENTATION TOWARD INTELLECTUALISM BY SUBJECTIVE STATUS, ABILITY LEVEL, AND IMPORTANCE OF GRADES FOR POPULARITY AMONG ONE'S PEER GROUP

		Grades Not Important		Grades Important	
Ability Level		Low Status	High Status	Low Status	High Status
1 (low)	%	35.8	28.7	57.8	55.4
	N	(2901)	(1140)	(1349)	(478)
2	%	40.1	34.3	63.3	55.7
	N	(2083)	(880)	(940)	(375)
3	%	44.8	38.3	67.3	60.1
	N	(1928)	(752)	(941)	(378)
4 (high)	%	48.7	44.3	72.4	68.2
	N	(2006)	(873)	(1208)	(459)

a_1 = .092 (.01> p) Ability
a_2 = -.057 (.01> p) Status
a_3 = .231 (.01> p) Importance of Grades

Thus, it has been shown that on the individual level, status in school makes an independent contribution to the variation in three aspects of academic behavior. No firm conclusions can be reached concerning the direction of causality for these relationships. Remaining unexplained beyond the level of speculation is the apparent inconsistency that on the whole, high status students achieve at a slightly higher level than low status students, aspire to attend college at a somewhat higher level, and yet show a lower level of commitment to generalized intellectualism. In two respects, achievement and college attendance plans, student elites fulfill the stated goals of secondary education better than non-elites. On the other hand, non-elites seem more oriented toward learning for the sake of knowledge and achievement.

Social Systemic Relationships Between Status and Academic Behavior

The object of this section is to present, by school, the effects on each of the dependent attributes, of status and that individual level characteristic most related to the particular dependent variable. The summary effect parameters will be examined to determine whether there are differences across schools and whether such differences as may occur are related to the dimensions of school climate. The reader may recall that in Chapter V these data were used in an attempt to replicate Coleman's finding (1961, pp. 260-266) relating social rewards for academic excellence to students' investment of energy and resources in academic achievement as opposed to non-academic activities. Specifically, his hypothesis was that in schools where the social rewards for academic excellence are greater, high achievers will be the students with the highest ability. Coleman's argument is that students' energy and resources will be invested in areas where social rewards produce the greatest amount of "return per unit invested."

If the reward system is such that achievement in the scholastic sphere brings little return, high ability students are more likely to channel their energies into more rewarding non-academic activities. Coleman's rather strong relationships were not reproduced in the present data. A related proposition will be examined here: The relationship between status and the three dependent attributes of this study should vary systematically with each of the six school climate dimensions. For example, the effect of status on math achievement should be negatively correlated with factor scores on the first climate dimension, Absence of Academic Emulation. For this analysis, it is perhaps easiest to think of the effect parameters as the difference in percent scoring high on the mathematics test between high status and low status students averaged across ability level. In these terms the proposition says that in schools low on Absence of Academic Emulation (i.e., those with a climate which promotes academic excellence) the discrepancy in performance between high and low status students at a given ability level should be greater in favor of the elites than in schools high on Absence of Academic Emulation.

For the presentation of the effects of status on academic behavior by school, only the data for the subjective status indicator will be given.[7]

Tables VI-12, VI-13, and VI-14 give the basic data for this analysis. It can be seen that there is considerable variation across schools in the degree to which status is related to the dependent attributes.[8] In eighteen of the twenty schools, student elites are more likely to have college plans than non-elites.

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[7] The weighted effect parameters for leading crowd choices tend to be slightly higher, but the ordering of schools by relative magnitude of parameters for the two status measures is virtually the same. The Spearman rank-order correlations between the two sets of effect parameters for the nine schools for which both status measures are available are .783 for the effects of status on mathematics achievement; .917 for college plans; and .950 for personal orientation toward intellectualism.

[8] It should be pointed out that significance level for the effect parameters is a function of the number of cases in a particular school, as well as the proportional split on the dependent variable for various combinations of the independent variables. Thus, for School 08, with over 2100 students, the weighted effect of ability level on personal orientation toward intellectualism at .098 is significant at beyond the .01 level, while the parameter for School 09, with just over 400 students, is not significant at the .05 level even though the magnitude is .142 (see Table VI-14). Since the respondents here represent not a sample, but virtually the total school population, the parameters are taken as real differences and the significance level is ignored.

TABLE VI-12

SUMMARY TABULATION BY SCHOOL OF WEIGHTED EFFECT PARAMETERS OF SUBJECTIVE STATUS ON COLLEGE PLANS WITH FATHER'S EDUCATION CONTROLLED

School	Weighted Effect of Father's Education Standardized to Dichotomous Form[a]	Weighted Effect of Dichotomized Subjective Status[a]
1	.254	.210
2	.265	.242
3	.366	.117
4	.130	.024[c]
5	.377	.093[b]
6	.129	.098
7	.183	.120
8	.281	.130
9	.301	.124[b]
10	.221	.110[b]
11	.114[b]	.056[b]
12	.130[c]	.122
13	.194	.059[c]
14	.248	-.019[c]
15	.250	.169
16	.326	.149
17	.242	.065
18	.195	.058[c]
19	.166[b]	.194
20	.324	-.015[c]

[a] Parameters are significantly different from zero at beyond .01 level of probability unless otherwise noted.

[b] Significant at .05 level of probability.

[c] Not significant at the .05 level.

TABLE VI-13

SUMMARY TABULATION BY SCHOOL OF WEIGHTED EFFECT PARAMETERS OF SUBJECTIVE STATUS ON MATHEMATICS ACHIEVEMENT WITH ABILITY CONTROLLED

School	Weighted Effect of Ability Level Standardized to Dichotomous Form[a]	Weighted Effect of Dichotomized Subjective Status[a]
1	.383	.114[b]
2	.359	.154[b]
3	.361	.005[c]
4	.269	-.022[c]
5	.341	.098
6	.333	-.031[c]
7	.292	.062[b]
8	.352	.013[c]
9	.313	.000[c]
10	.379	.054[c]
11	.287	-.030[c]
12	.320	-.042[c]
13	.309	.006[c]
14	.321	-.024[c]
15	.369	.056[c]
16	.332	.056[c]
17	.384	.040[c]
18	.355	.024[c]
19	.338	.024[c]
20	.341	.021[c]

[a] Parameters are significantly different from zero at beyond .01 level of probability unless otherwise noted.

[b] Significant at .05 level.

[c] Not significant at the .05 level.

TABLE VI-14

SUMMARY TABULATION BY SCHOOL OF WEIGHTED EFFECT PARAMETERS OF SUBJECTIVE STATUS ON PERSONAL ORIENTATION TOWARD INTELLECTUALISM WITH ABILITY LEVEL CONTROLLED

School	Weighted Effect of Ability Level Standardized to Dichotomous Form[a]	Weighted Effect of Dichotomized Subjective Status[a]
1	.086[c]	.133[b]
2	.164	-.041[c]
3	.095[c]	-.060[c]
4	.020[c]	-.027[c]
5	.039[c]	-.029[c]
6	.099[b]	-.092
7	.124[b]	-.063[c]
8	.098	-.088
9	.142[c]	-.015[c]
10	.079[c]	-.007[c]
11	.075[c]	-.029[c]
12	.120[c]	-.051[c]
13	.126[b]	-.074[b]
14	.116[c]	-.119
15	.063[c]	-.017[c]
16	.058[c]	-.030[c]
17	.138	-.112
18	.078[c]	-.091[b]
19	.138[c]	-.086[c]
20	.118[c]	-.107

[a] Parameters are significantly different from zero at beyond .01 level of probability unless otherwise noted.

[b] Significant at .05 level of probability.

[c] Not significant at the .05 level.

The effects of status on mathematics achievement with ability controlled have a slightly smaller range of variation than do the parallel effects on college plans. In five of the twenty schools--Schools 04, 06, 11, 12, and 14--a smaller proportion of self-designated leading crowd members than those saying they were not in the leading crowd scored high on the mathematics test (Table VI-13). In nineteen of the twenty schools, elites are less intellectually oriented than non-elites (Table VI-14). The pattern of results for schools, in general, fits the pattern of results for all schools combined in direction of relationship. It is interesting to note that in two schools the relationships between status and the three dependent attributes are, in Boocock's words, "consistent with consistency theory." These schools are 01, where status is positively related to each dependent attribute, and 14, where status is negatively related to them. Again, it is pointed out that School 01 is in a New England town in which two institutions of higher learning dominate the economic and social life of the area. About forty-nine percent of the labor force was employed in rendering educational services in 1960 while the comparable figure for the urban areas of the country as a whole was 5.3. School 14 is located in a "bedroom community," a suburban area stereotypically populated by the "organization man." The surprising feature of these schools is that School 14 has significantly higher median mathematics performance (6.4038 vs. 5.3793) and a larger proportion of students with college plans (.687 vs. .591) than School 01. The latter school does exceed the former in median scale score for personal orientation toward intellectualism (3.000 vs. 2.625). This suggests that perhaps the kind of environment which transfers an intellectual orientation, as opposed to generalized achievement orientation, to high school students is one dominated by an intellectual community. Further suggested is a point which has been stressed earlier in this research; namely, that an intellectual orientation is relatively independent of and quite different from the middle-class achievement motivation which typically provides the incentive for high-achieving students in an institution such as School 14.

There is, then, variation across schools in the strength of the effect of status on each of the dependent attributes. What remains to be answered is whether this variation in magnitude of effect parameters is related to variations in the climate dimensions of schools. Spearman rank-order correlations are used to assess the degree of covariation between the effect parameters and factor scores. To reiterate for the sake of clarity, what is being correlated are ranked effect parameters of status on the dependent attributes (i.e., rank-ordered measures of strength of relationship) with ranked factor scores. The unit of measurement is the school. Table VI-15 gives the rank-order correlations by dependent attribute for each of the six climate dimensions.

All the relationships between the effect of status on college plans and climate dimensions are in the _wrong_ direction except for the Absence of Scientism dimension, and the correlation with this dimension is effectively zero. The relationships for the other two dependent variables show more consistency with the expected pattern, but they are, with two exceptions, well below the magnitude required for statistical significance. The climate dimension representing Factor III, Cohesive and Egalitarian Estheticism, is related to rank-ordered status effects on each of the dependent variables in the wrong direction, and significantly in the case of college plans. No _ex post facto_ explanation is offered for this unexpected relationship. The other two relationships in Table VI-15 which are strong enough to be significant are in the predicted direction.

TABLE VI-15

RANK ORDER CORRELATIONS AMONG SCHOOL FACTOR SCORE RANKS AND SCHOOL LEVEL WEIGHTED EFFECT PARAMETERS OF STATUS ON COLLEGE PLANS, MATHEMATICS ACHIEVEMENT, AND PERSONAL ORIENTATION TOWARD INTELLECTUALISM WITH FATHER'S EDUCATION OR ABILITY LEVEL CONTROLLED

	Climate Dimensions	Dependent Attribute	Control Variable[a]	Correlation	Correlation in Direction Predicted
I	Absence of Academic Emulation	College Plans	Father's Education	.332	No
II	Absence of Intell.-Estheticism	College Plans	Father's Education	.032	No
III	Cohesive and Egalitarian Estheticism	College Plans	Father's Education	-.471[b]	No
IV	Absence of Scientism	College Plans	Father's Education	-.012	Yes
V	Humanistic Excellence	College Plans	Father's Education	-.232	No
VI	Academically Oriented Status System	College Plans	Father's Education	-.063	No
I	Absence of Academic Emulation	Mathematics	Ability Level	-.144	Yes
II	Absence of Intell.-Estheticism	Mathematics	Ability Level	-.532[b]	Yes
III	Cohesive and Egalitarian Estheticism	Mathematics	Ability Level	-.218	No
IV	Absence of Scientism	Mathematics	Ability Level	-.445[b]	Yes
V	Humanistic Excellence	Mathematics	Ability Level	.101	Yes
VI	Academically Oriented Status System	Mathematics	Ability Level	.310	Yes
I	Absence of Academic Emulation	Personal Orientation Toward Intellectualism	Ability Level	-.260	Yes
II	Absence of Intell.-Estheticism	Personal Orientation Toward Intellectualism	Ability Level	-.209	Yes
III	Cohesive and Egalitarian Estheticism	Personal Orientation Toward Intellectualism	Ability Level	-.057	No

TABLE VI-15 (continued)

	Climate Dimensions	Dependent Attribute	Control Variable[a]	Correlation	Correlation in Direction Predicted
IV	Absence of Scientism	Personal Orientation Toward Intellectualism	Ability Level	-.119	Yes
V	Humanistic Excellence	Personal Orientation Toward Intellectualism	Ability Level	.143	Yes
VI	Academically Oriented Status System	Personal Orientation Toward Intellectualism	Ability Level	.274	Yes

[a] The control variable is the individual level characteristic which was controlled in the tabulations summarized in Tables VI-12 through VI-14 where the independent contribution of status to the explanation of the dependent attributes was determined.

[b] Significant at .05 level of probability.

These two relate the effect of status on mathematics achievement to the dimensions Absence of Intellectualism-Estheticism and Absence of Scientism. While these relationships are suggestive, they do not, when taken in conjunction with the other relationships, offer much support for the proposition. One is forced to the conclusion that the social and intellectual climates of schools do not significantly, in a substantive sense, affect the relationships between status and academic behavior.

The climate dimension which, above all others, would be expected to be related to the strength of association between status and the dependent attributes is the one measuring the relative degree of academic orientation in the status system. It should be true that if some student bodies socially reward intellectualism and academic performance more than other student bodies, status in the school social system would be more related to academic behavior in the former than the latter type of school. The correlations between school factor scores for Factor VI and the effects of status on mathematics and on intellectual orientation are in the expected direction, but they are small. The relationship between factor scores on this factor and the effect of status on college plans is not even in the expected direction. Again, one is led to the conclusion that the value content of the status system bears no systematic relationship to academic behavior.

Given that the intellectual climates of schools do not explain the variation in the magnitude of the effects of status on the dependent attributes, the question arises, what does account for this variation? Coleman, in his original study of the ten Illinois high schools, offered a possible explanation. He found that college intentions varied considerably more by school than did family background (i.e., proportion of the students in school whose fathers had some college education, a school-level measure he found to be moderately related to the proportion going to college). He concluded that the greater variation could not be explained by the differences among schools in the importance of scholastic effort for status. His suggestion, which he had no way of testing with his data, was that the status implications of college-going varied among schools. Following Coleman's argument that elites in a school exemplify the values of the student culture, it should be the case that the effect of status on college plans varies directly with the proportion of students in a school who have college intentions. The rank correlation between the effect of status on college plans and proportion of students with college plans is -.526 ($.05 > p$). That is, the higher the proportion of students in a high school with college intentions, the lower the difference between the proportion of low status and high status students with such intentions. Far from supporting Coleman's suggestion, this relationship contradicts it. Two other possible explanations for the variation across schools in the magnitude of the effects of status on college plans are suggested: (1) that a statistical "ceiling effect" is operating, or (2) that a relative abundance of students with college plans means that college-going cannot be a phenomenon which distinguishes between high and low status students. An examination of the 2 x 2 tables (status by college plans) for each school indicates that marginal splits on the two attributes do not constrain the degree of relationship for any school (i.e., given the marginals of the 2 x 2 table for any school, the difference between percent college bound among high status students and the percent among low status students could have been larger than it actually is.)

The second suggestion offered above, then, is the alternative the authors are more inclined to accept. The concept of status ranking implies a relative scarcity (in the social system to which the ranking applies) of those qualities which are deemed to be necessary and sufficient for high status. Thus, in schools where most students have definite plans for college, the constellation of attributes associated with college going (e.g., family background, ability, "right friends," motivation, etc.) may be necessary, but not sufficient, qualities for entree into leading crowd. On the other hand, in schools where less than a majority of students have college intentions, the constellation of factors associated with college-going may be both necessary and sufficient or, more likely, just sufficient for inclusion among the elites.

It should be mentioned that similar relationships do not obtain between the effect of status on mathematics achievement and proportion scoring high on that test and between the effect of status on personal orientation toward intellectualism and proportion with a high score on the scale. This may be attributable to the fact that the schools vary rather narrowly around the over-all proportions on these two measures.[9]

One piece of evidence does further relate Factor VI to the value content of school status systems. Question 67b in the boys' version of the student questionnaire asks them to name the "best student" and "best athlete" among the boys in their grade in school.[10] The number of such choices received, along with the number of leading crowd choices received, was summed for each boy. Then, for each school, boys were characterized as being athlete-scholars, athletes, scholars, or other, depending on whether they received two or more choices as both best athlete and best scholar, as best athlete, as best scholar, or as neither. The mean number of leading crowd choices for boys named two or more times as best athlete or two or more times as best student, are shown by school in Table VI-16. The discrepancy between these means (mean leading crowd choices received by "best athletes" minus mean leading crowd choices received by "best scholars") can be taken as an index of the degree to which athletes fare better than scholars in terms of prestige. If this index is adjusted (by dividing the discrepancy by mean leading crowd choices received by all boys in the school) to take into account the fact that mean choices received vary across schools, the resulting new index can be compared across schools to determine whether it varies systematically with variations in the value content of the student status system.

One would expect the discrepancy between leading crowd choices received by "best athletes" and those received by "best students" to be smaller, the more students reward intellectualism and academic achievement. That this is indeed

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[9] The highest and lowest proportions of students in a school with college plans, scoring high on the math test, and with high values on the POTI scale are .340-.806, .264-.682, and .356-.544, respectively.

[10] See Coleman (1961, Chapter 6) for the rationale underlying this question and his findings relating this categorization of male students to the student culture in high schools.

TABLE VI-16

MEAN LEADING CROWD CHOICES BY SCHOOL FOR BOYS NAMED AS BEST SCHOLAR OR AS BEST ATHLETE

School	(1) Mean Choices for Scholars	(2) Mean Choices for Athletes	(3) Discrepancy (2) - (1)	(4) School Mean Choices for Boys	(5) Index (3) ÷ (4)
1	5.533	8.411	2.878	2.148	1.340
3	5.250	8.666	3.416	1.882	1.815
5	11.324	14.000	2.676	2.105	1.271
7	3.821	6.172	2.351	1.650	1.425
9	2.166	22.500	20.334	2.439	8.337
14	2.357	18.294	15.937	2.386	6.679
15	7.517	11.684	4.167	2.443	1.706
17	7.128	10.120	2.992	2.133	1.403
20	3.840	13.550	9.710	2.337	4.155

the case is reflected in the rank-order correlation of -.633[11] between the adjusted discrepancy index and factor scores for the sixth factor, Academically Oriented Student Status System. Here, then is evidence that the value content of the student status system does affect to some extent the position of scholars relative to athletes.

This relationship, in conjunction with results from Chapter V where the effects of Factor VI on the dependent attributes were reduced below the level of significance with personal characteristics controlled (see Tables V-3, V-12, V-13) and where no relationship was found between factor scores on this climate dimension and average I.Q. of high achievers (see Tables V-6, V-7), demands further attention. This is especially important since the results from Chapter V do not support Coleman's findings on the relationship of the value content of the status system to ability of high-achieving students in _The Adolescent Society_--results which are considered the major substantive contribution of that work. One must ask whether the above relationship is logically inconsistent with the results from Chapter V. The pertinent question seems to be: Can school status systems vary in the extent to which high-achieving students are accorded prestige and yet not have the effect of channeling students toward or away from academic pursuits? The data for providing a definitive answer to this question are not at hand. A final observation is relevant, however. As has been mentioned several times in this report, in none of the schools represented in the sample do student bodies rank achievement in scholastic activities above achievement in extra-curricular activities in determination of status. In absolute terms scholars never do as well as athletes. On the other hand, even in the schools which are poorest in terms of median math scores and proportion going on to college, some prestige accrues to scholars. If the present sample included the most anti-intellectual of city ghetto schools and the finest of private preparatory schools, perhaps the values of student status systems would have varied enough to explain variation in academic behavior beyond that explained by input characteristics and various aspects of the school environment.

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[11] This correlation is based on nine cases, a case being defined as one of the nine schools for which sociometric data are available. For N=9 an r_s of -.633 is significant beyond the .05 level. Rank correlations between this index and Factors I-V are, respectively, -.300, -.500, +.133, -.533, and +.300. All are in the expected direction but none of these is significant at the .05 level.

There is still reason for doubt, though, because even Groton and Choate place some importance on athletics and extra-curricular development, and the worst of city ghetto schools have National Honor Societies and other means of recognizing academic achievement. Perhaps the point to be made is this: Students make an investment in the social and scholastic activities of the school, and though they realize that some endeavors bring more or less prestige than others, the criteria for choosing activities are personal capabilities and a complex of interpersonal processes which operate selectively to influence individuals in a very narrow range of investment possibilities. Students are more probably frustrated by or gratified by the school system of prestige allocation than influenced by it.[12] The results from Chapter V and this chapter do, in fact, support the conclusion that school status systems vary in the extent to which they give social rewards to non-scholastic, at the expense of scholastic, commitment of resources; however, this variation does not seem to be related on the social system level to allocation of intellectual effort.

Nevertheless, it must be admitted that this thesis is not proven. Though data are suggestive, the argument is compelling to the authors. Since there is no further evidence to be brought to bear on this question and since Factor VI, Academically Oriented Status Systems, makes no independent contribution to the explanation of the dependent attributes after relevant individual level characteristics are controlled, it will be excluded from the remainder of this report.

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[12] This is not to say that there are not "structural" effects on academic behavior, of course. The general intellectual tone of a school environment has effects which have been demonstrated in Chapters IV and V. The distinction is important. The argument here is that, for example, the high school students in a small Midwestern farming community are low achievers and aspirers because their milieu is basically anti-scholastic or, more accurately, ascholastic, not because their status system does not reward achievement and aspiration.

Summary

The purpose of this chapter has been to examine (1) on the individual level, the relationships between social status and academic behavior, and (2) on the social systemic level, the relationships between the normative climates of schools and the effects of status on academic behavior.

Two measures of social status were introduced. One, available for only nine of the twenty schools, is based on the number of leading crowd choices received from members of the same sex in each high school. The other status indicator is based on the respondent's subjective evaluation of his own status. These measures have been shown to be sufficiently related to each other, to be interchangeable for the analysis carried out here. Furthermore, they are about equally related to respondents' ability level and family background.

Consistent with the findings of previous research, high status students in the present sample were found to be more likely to have college plans, more likely to score high on the mathematics achievement test, and less likely to express a strong commitment to intellectual values. These relationships persist with father's education controlled in the analysis of college plans and with ability level controlled in the analysis of mathematics achievement and intellectual orientations.

The introduction of a measure of peer group influence on college plans (the proportion of a respondent's immediate friendship group either going to college or already in college) decreased by about fifty percent both the effects of status and the effects of father's education on this dependent attribute. The reduction in the effect of status through controlling peer group influences is consistent with the McDill-Coleman contention (1963) that high status students are subjected to more socialization influences to formulate and maintain college plans than are low status students.

Peer group influence measures likewise show some degree of effect on mathematics achievement and intellectualism. The same measure, the importance of making good grades for popularity in one's immediate friendship group, was used for both intellectualism and achievement. The peer group effect is independent of the relationships between status and these two dependent attributes; that is, it does not affect the degree of relationship between status and the two attributes.

Peer group influence accounts for more of the variation in college plans than in intellectual orientations or mathematics achievement, and for more of the variation in intellectualism than in mathematics achievement. The discussion of peer group influences on the dependent attributes in Chapter V pointed out some of the reasons that a strong peer group effect is expected on college plans. The same type of arguments holds for peer influences on intellectualism. Furthermore, it is to be expected that peer influences on intellectualism will be less than those on college plans since intellectualism is less salient and less important for success in American culture than is a college degree. Perhaps it is a truism that "social" influences will be greater on attitudional and aspirational aspects of academic behavior than on achievement. As was pointed out in Chapter V with regard to performance on the mathematics test, it is impossible for students to perform at levels beyond their capacities. Since most students in fact perform below their capacities, "social" influences may provide motivation to spur students closer to their potential. It may be that the effects which have been found for the intellectual climates of schools, peer groups, and status on mathematics achievement are reflections of just such motivational influences.

The effects of status and father's education on college plans, status and ability level on mathematics achievement, and status and ability level on intellectual orientation were presented by school. The relationships between status and the dependent attributes were examined and found to vary considerably across schools. Following Coleman's argument (1961) about the effect of adolescent status systems on the channeling of students' efforts into scholastic or extracurricular activities, the proposition was examined that there are systematic relationships between the normative climates of schools and the degree of association between status and the dependent variables. No such relationships were found. An alternative proposition, that the status implications of college-going varied among schools in direct proportion to the rate of college-going in schools, was not only not supported but was contradicted. The idea that an attribute must be scarce to qualify as a status determinant was introduced as an *ex post facto* explanation for the negative relationship between the effect of status on college plans and the proportion of students going to college.

A significant negative correlation was found between the degree of academic orientation of the student status system (Factor VI) and the status of "scholars" relative to "athletes." That Factor VI is related to the position of "scholars" relative to "athletes," while no relationships exist between Factor VI and the effects of status on the three dependent attributes, was resolved by concluding that while school status systems may differentially reward some activities at the expense of others, such systems do not materially influence students in the selection of areas where they invest their energies and resources.

Given the lack of consistent relationships between (1) Factor VI and the dependent attributes (as shown in Chapter V) and (2) Factor VI and the effects of status on the dependent attributes (as shown in the present chapter), this climate dimension will be deleted from the analysis presented in subsequent chapters.

The subject of the following chapter is an examination of sources of school climate effects on the dependent attributes.

Chapter VII

SOURCES OF CLIMATE DIMENSIONS

Introduction

In Chapter II it was noted that one of the purposes of this study is to attempt to uncover some of the sources of climate effects on the dependent attributes by introducing into the analysis factors from the larger community, as well as formal organizational properties of the school. This is the objective of the present chapter.

The search for sources of effects of the climate dimensions will be restricted to only two of the three original dependent variables. Students' scores on the intellectualism scale (POTI) will be eliminated from this section of the analysis because the great mass of data presented on the effects of climate dimensions and personal characteristics on this attribute in preceding chapters leads to the conclusion that sources of intellectualism appear to lie not in the school or the larger community but in such aspects of the home environment as family value systems and role structures. This type of data is not available in the present investigation; and as noted earlier, systematic research on the topic would require an intensive longitudinal study of parent-child relationships.

Community Characteristics as Sources of School Climates

A number of educational researchers have argued that characteristics of the community environment--primarily socio-economic resources--are important determinants of student performance. Such community factors as amount of financial support for education, presence of intellectual facilities such as libraries and museums, and socio-economic characteristics of residents have been viewed as outside-school sources of variation in student achievement. However, as noted by Boocock (1966, p. 38), the evidence that such factors have important educational consequences is far from conclusive.[1] Given the lack of consistency of findings in this area it is especially important to assess the importance of community characteristics for which measures are available in the present study.

Some of these characteristics can be summarily dismissed as sources of school climates because they do not vary across communities. A number of community "cultural" facilities can be eliminated on these grounds: In every school, students had access to a public community library; in fifteen of the twenty, "concerts" were readily available to them, and the same holds true for "community theatre" in sixteen of the twenty schools.[2] Although the communities show sufficient heterogeneity on four other intellectual resources for consideration as potential sources of variation in climate effects--museum, art gallery, opera, and professional stage--consideration of these facilities failed to produce any consistent relationships with the two dependent attributes.[3] Thus, it is concluded that in the present sample the accessibility of a number of community cultural facilities has no impact on the relationship of the educational and social climate of the school to students' academic performance and college plans and, therefore, cannot be considered as sources of such school environmental effects on these two dependent attributes. It should be strongly emphasized that no attempt is made to generalize this conclusion to high schools in general. That is, although these schools are located in communities which are certainly not homogeneous with respect to intellectual or cultural facilities of the type just described, their community environments are not a representative sample of U.S. communities in these respects. Consequently, if these schools were located in or near communities showing a less restricted range on these facilities, such facilities could possibly have an impact on the educational climate of the schools.[4]

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[1] For example, Coleman (1961, p. 265) found no relationship between per-pupil expenditure and achievement of students with ability controlled. He also cites a state-wide study of Connecticut high school students which failed to reveal such a relationship when ability was controlled. Finally, at the college level, he cites (p. 329) results from a classic study of productivity of scientists (Knapp and Goodrich, 1952) among American colleges which revealed that the "high producing" undergraduate institutions were not the most affluent.

Two rigorous measures of the amount of financial support of the community to schools are available in the Principal's Questionnaire--average per-pupil expenditure (Question 79) and annual starting salary for teachers (Q. 48).[5] An inspection of the data in Table III-1 reveals that the schools show a great deal

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[2] These data are based on responses to Question 82 in the Principal's Questionnaire in Appendix A. Of course, these measures of the "intellectual" or "cultural" atmosphere are crude in the sense that they are merely indicators of the presence or absence of such facilities. However, it is reasonable to assume that the quality of these facilities is positively correlated with a number of socioeconomic resources to be presented below for which ordinal or interval data are available, and which are shown not to be sources of climate effects on the dependent attributes. Thus, it seems justifiable to conclude that these three community facilities are not sources of variation in school climate effects on student achievement and college plans.

[3] Implicit in this statement is a fundamental statistical truism: For a given variable to be a source of the effects of climate dimensions on students' academic behavior, the "source" characteristic has to be associated with both the climate dimensions and the dependent attributes.

[4] For example, none of the twenty schools is located in a typical small town or rural community. They are all "urban" schools in that they are located either in (1) a large metropolitan area (2) a suburb of such an area or (3) in a community which is highly accessible to a metropolitan area. In any of these community settings students have access to a substantial number of cultural facilities of the type described above.

[5] Within each school the starting salaries for males and females are the same.

TABLE VII-1

ZERO-ORDER EFFECTS OF AVERAGE PER-PUPIL EXPENDITURE AND ANNUAL STARTING SALARY FOR TEACHERS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT[a]

Independent Attributes	Dependent Attributes	
	College Plans	Math Achievement
Average Per-Pupil Expenditure	.054[b]	-.008[b]
Teachers' Salaries	.016[b]	.008[b]

[a] Results are based on a representative ten percent sample of the students in each school (N=2,053). All effect estimates are unweighted and obtained from school quartile ranks standardized to dichotomous form.

[b] Not significant at the .05 level.

of variation on these two characteristics; per-pupil expenditure ranges from $365 to $1,000, and teachers' salaries vary $1,000. Consequently, any failure of these two measures of capital investment to account for variation in climate sources cannot be explained in terms of their restricted range. Table VII-1 presents the zero-order effect parameters of these two characteristics on the two dependent attributes for a representative ten percent sample of the students in each school (N=2,053).[6] Both of these economic input resources of the community can be eliminated as sources of climate effects since neither is significantly related to the two dependent attributes. In fact, the two characteristics have, for all practical purposes, no relationship with math achievement.[7]

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[6] In the search for source variables, zero-order relationships between such variables and the dependent attributes are often based on the ten percent sample in order to minimize computer costs, and the .05 level of significance, not the .01, is chosen as the one beneath which a relationship is discounted. For those variables which show a significant relationship with the dependent attributes based on the ten percent sample, the effects of such variables on the two dependent attributes are then computed for the total population of students with ability and father's education simultaneously controlled. (See Tables VII-6 and VII-7 below for an example of this approach.) That is, no community or school characteristic can qualify as a source of climate effects unless the characteristic has a significant effect on a dependent attribute with the ability of the respondents and family SES both held constant.

The most widely accepted purported community source of variation in educational climates of schools has yet to be considered in this presentation--the socio-economic status of the school, community, or neighborhood in which the school is situated. As noted in the preceding chapter, the great majority of contextual or climate research on the academic behavior of high school students has used the average socio-economic composition of the neighborhood, school, or community as the indirect indicator of the normative climate of educational institutions.[8] Thus, these studies have as their basic premise the idea that the socio-economic context of the neighborhood, community, or school is the primary source of the educational atmosphere of the school, which in turn affects the academic behavior of students.[9] Sewell and Armer (1966, pp. 161-162) have succinctly summarized the theoretical rationale of such research:

> "Much evidence has accumulated to indicate that ecological processes in large cities result in socio-economic segregation. It has also been shown that school segregation is in large part a consequence of residential segregation. Since high school enrollment areas represent functioning subcommunities for high school youth within larger urban complexes, it may be expected that informal mechanisms, such as normative climates or modal levels of aspiration, would emerge and would have some pervasive influence on the aspirations of all youth residing in the neighborhood, regardless of the socio-economic status or ability levels of the youth. In other words, the prediction would be that the socio-economic status of the high school district--since it presumably reflects the shared norms and aspirations of its members--would have an important effect on the educational aspirations of its youth *over and above that of family socio-economic status or individual ability*." (italics ours)

In the present investigation the proportion of students whose fathers have at least some college is utilized as the indicator of the socio-economic context of the community or geographical region served by the school. In their study, Sewell and Armer (1966, p. 161) argue that the findings of a number of studies on this topic are suspect on the grounds that there is an element of "contamination" introduced in the SES context variable because both it and family SES of the student are based on the same information. Their results show (p. 167) that SES context of the school (as measured by proportion of students whose fathers held white collar occupations) has less predictive power than the socio-economic composition of the neighborhood. Given Sewell's and Armer's findings, the median education level of the geographical area served by the school was considered as a measure of SES context. This measure was discarded, however, because it is not as highly associated with math achievement and college plans (either at the individual or ecological level) as the measure based on father's education.[10]

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[7] In the recent national study Coleman, *et al*. (1966, Chapt. 3) found that, overall, the proportion of variation in student achievement accounted for by per-pupil instructional expenditure was negligible.

[8] See footnote 48 of Chapter V for a number of these studies. Additional references may be found in Sewell and Armer (1966, pp. 159-160).

[9] Such a position is stated most unequivocally by Rogoff (1961, p. 242).

In constructing the measure of the SES context of the school for consideration as a source of climate variation, the schools were ranked by the proportion of students whose fathers had at least some college and then the distribution was dichotomized at the median. In the remainder of the analysis involving a search for sources of variation in school climates, many of the potential source variables (i.e., those which have a significant relationship with the dependent attributes) will be dichotomized. In addition, the five climate dimensions which are being utilized in the analysis will be dichotomized rather than retaining the quartile classification scheme employed throughout the earlier part of the analysis. The use of these collapsed categories for some of the potential source variables and all the climate dimensions is necessary because the relationship between such source variables and the climate dimensions is sufficiently pronounced that to use more refined categories would result in numerous cells of the partialed tables having few or no cases when the relevant personal attributes are controlled.[11]

Given the purported importance of the SES context of the school as an indicator of its normative climate, the relationships between this dichotomized attribute and the two dependent attributes were computed for the entire population of the schools, not the representative ten percent sample. The dichotomized zero-order effects of SES context on college plans and math achievement are presented in Table VII-2. The table also gives the dichotomized effects (not quartiles standardized to dichotomies) of each of the five climate dimensions retained in the analysis.[12] SES context and each of five climate dimensions have a significant

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[10] The source of the discrepancy between the results of this study on this point and those of Sewell and Armer is purely a matter of speculation. It could be attributable to differences in populations studied. Their population of respondents, high school seniors in Milwaukee, is culturally more homogeneous because it is restricted to a single metropolitan area. Their contextual units (school districts) are probably as heterogeneous as our contextual units (communities). However, one would certainly expect school districts to be internally more homogeneous than communities.

[11] As has been the case throughout the analysis, four categories will be used for the two crucial personal attributes--scholastic ability and father's education.

[12] A comparison of the effects of the dichotomized climate dimensions with those of Tables IV-1 and IV-2 (based on quartile rankings standardized to dichotomous form) reveals some differences in magnitude. These discrepancies are attributable to the form of the distribution of the categories on the independent attributes: For the effect parameters obtained from ordered, polytomous independent attributes and standardized to dichotomous form (i.e., those in Tables IV-1 and IV-2) to be identical to those based on dichotomies (as is the case in Table VII-2),the sample would have to be rectangularly distributed over the ordered categories (Coleman, 1964, p. 218).

TABLE VII-2

ZERO-ORDER DICHOTOMIZED EFFECTS OF SCHOOL SES CONTEXT AND CLIMATE DIMENSIONS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT[a]

Independent Attributes	Dependent Attributes	
	College Plans	Math Achievement
SES Context	.109	.091
I Absence of Academic Emulation	-.203	-.201
II Absence of Intell.-Estheticism	-.149	-.146
III Cohesive and Egalitarian Estheticism	.125	.126
IV Absence of Scientism	-.064	-.084
V Humanistic Excellence	.116	.119

[a] Results are based on total population of students, not the ten percent sample. All effect parameters are unweighted estimates and are significant at the .01 level.

effect in the expected direction and of roughly the same order of magnitude on the two dependent attributes.

Table VII-3 shows the effects of SES context and the five climate dimensions on college plans and math achievement with ability and father's education held constant.

Two very important findings are evident in the table. First, the original effects of SES context on the dependent attributes almost totally disappear. Thus, in the present sample the putative influence of SES context on both dependent variables is attributable to family background and ability of the students. On the other hand, the climate dimensions retain part of their significant zero-order explanatory power on the two attributes.[13]

Table VII-4 gives (1) the effects of SES context on the two dependent attributes with a given climate dimension, ability, and father's education

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[13] The only exception is the effect of Factor IV on college plans which is almost non-existent. Table V-1 (using climate quartile rankings), it will be remembered, also shows no significant effect of Factor IV on college plans.

TABLE VII-3

SUMMARY EFFECTS OF DICHOTOMIZED SCHOOL SES CONTEXT AND CLIMATE DIMENSIONS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED[a]

Independent Attributes		Weighted Effect Estimates of Independent Attributes on College Plans[b]	Weighted Effect Estimates of Independent Attributes on Math[c]
SES Context		.010[d]	.006[d]
I	Absence of Academic Emulation	-.113	-.112
II	Absence of Intell.-Estheticism	-.076	-.077
III	Cohesive and Egalitarian Estheticism	.037	.054
IV	Absence of Scientism	-.015[d]	-.042
V	Humanistic Excellence	.032	.048

[a] Results are based on total population of students, not the ten percent sample. All effect parameters are significant at the .01 level unless otherwise noted.

[b] Father's education and scholastic ability have approximately constant effects with each of the six independent attributes controlled. The effects of father's education vary from .216 to .239 and those for ability from .174 to .183.

[c] Father's education and scholastic ability have approximately constant effects with each of the six independent attributes controlled. The effects of father's education vary from .130 to .152 and those for ability from .317 to .327.

[d] Not significant at the .05 level.

TABLE VII-4

SUMMARY EFFECTS OF DICHOTOMIZED SCHOOL SES CONTEXT ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH CLIMATE DIMENSIONS, FATHER'S EDUCATION, AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED AND SUMMARY EFFECTS OF DICHOTOMIZED CLIMATE DIMENSIONS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH SCHOOL SES CONTEXT, FATHER'S EDUCATION, AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates on College Plans of:		Weighted Effect Estimates on Math of:	
		Climate Dimensions[b]	SES Context[c]	Climate Dimensions[b]	SES Context[c]
I	Absence of Academic Emulation	-.126	-.038	-.127	-.042
II	Absence of Intell.-Estheticism	-.077	-.009[d]	-.079	-.013[d]
III	Cohesive and Egalitarian Estheticism	.042	-.006[d]	.065	-.025
IV	Absence of Scientism	-.013[d]	.008[d]	-.042	-.003[d]
V	Humanistic Excellence	.036	-.007[d]	.060	-.025

[a] Results are based on total population of students, not the ten percent sample. All effect parameters are significant at the .01 level unless otherwise noted.

[b] The parameters in this column represent the effects of each climate dimension on the dependent attribute with SES context, father's education, and ability simultaneously held constant.

[c] The parameters in this column represent the effects of SES context with a given climate dimension, father's education, and ability simultaneously held constant.

[d] Not significant at the .05 level.

simultaneously controlled and (2) the effects of each climate dimension on the two with SES context, ability, and father's education controlled.[14] Not only does controlling SES context not reduce the relationship between each of the climate dimensions and the two dependent attributes with the effects of father's education and ability removed, the effects of the climate dimensions slightly increase and those of SES context become negative. A possible statistical explanation of this paradox is presented by McNemar (1962, pp. 186-187) by introducing the term "suppressant" variable. The employment of this concept to the present problem is as follows: The very slight increase in the effects of the climate dimensions on both dependent attributes is accounted for by introducing a variable--SES context of the school--which has almost no relationship to college plans and math scores (when father's education and ability are controlled) yet which correlates well with the factor scores.[15] When the effects of SES context are removed (i.e., the suppressant variable) the relationships between the climate dimensions and the two dependent variables are slightly enhanced.[16]

This increase is attributable to the fact that the suppressant variable (i.e., SES context), in spite of its relationship with an independent variable, has some variance in it that correlates negatively with the criterion. This variance prevents the independent variable (i.e., a particular climate dimension) from correlating as highly with the criterion as would be the case if the effects of the suppressant were removed.

Based on the findings of Tables VII-3 and VII-4, two interrelated and very important conclusions are drawn. First, the conclusions of numerous earlier studies that the socio-economic composition of the school, neighborhood or community has an important influence on the educational plans or aspirations of high school students is open to serious doubt. Of course, as noted in Chapter V, this position has recently been challenged by Sewell and Armer (1966), based on their study of Milwaukee high school seniors. The same doubt may be raised about SES context effects on rigorous measures of academic achievement, a dependent variable which has been almost completely ignored in previous studies. Secondly, for the present sample of institutions, the socio-economic composition of the schools cannot be considered as a source of variation in the effects of the educational and social climate on two important classes of academic behavior--a position which has been uncritically accepted by previous researchers concerned with school contextual effects on students' behavior.

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[14] In other words, Tables VII-3 and VII-4 are identical with the exception that in each row of Table VII-4 both SES context and one of the climate dimensions are held constant in addition to father's education and student's ability, whereas in Table VII-3 only father's education and ability are controlled in each row.

[15] The absolute mean rank correlation between the five factors and SES context is .530.

[16] No attempt is made here to translate McNemar's statistical explanation into one of a substantive nature for the results in Tables VII-3 and VII-4. Such a problem is complex and beyond the scope of this investigation. Nevertheless, all of the conditions listed by McNemar for a suppressant variable to operate are found in the data of the two tables. Guilford (1965, pp. 405-406) also discusses suppressant variables, which he refers to as suppressor variables. In his discussion, Guilford points out that the suppressor variable may acquire a negative regression weight. The reader may note in this connection that SES context has a negative effect parameter in four instances out of five for college plans and in all five cases for math achievement.

One may question the generality of these two important conclusions given the fact that the sample of schools selected for study here are not a statistically representative sample of U.S. high schools. However, it should be strongly emphasized that these twenty schools show at least as much variation in their demographic, regional, and socio-economic contexts as the previous studies whose findings and conclusions conflict with the two just enumerated. In fact, it seems that the present sample of schools is more typical of U.S. public high schools than those employed in previous research which have uncovered SES contextual effects on students' academic behavior. These studies have frequently been restricted to a single community or geographical area. Furthermore, these conclusions are consistent with the findings of the national study by Coleman, et al. (1966, Chapt. 3) that school facilities and curriculum, which are indirect indicators of the community's input of economic resources into the school, account for only a very small amount of variation in student achievement.

Thus far in this chapter it has been rather conclusively demonstrated that a number of cultural facilities and socio-economic resources of the community and/or school fail to qualify as sources of school climate effects on students' college plans and academic achievement.

However, one school or community level factor which does function as a source of educational climate variation is the extent of involvement and interest of parents in school policies and their children's academic performance. This variable is labeled "Parental Press for Involvement in the High School" (PPIHS) and consists of a summated binary rating scale constructed from three items in the teacher questionnaire.

The relevant summary statistics for the scale are presented in Table VII-5, and they show a high reliability coefficient for a measure containing such a limited number of items. This attribute is introduced as a contextual measure of the extent to which norms and values regarding academic excellence in the school are shared by the parents (and thus community or neighborhood served by the school). The underlying proposition is that the more prevalent these norms and values among parents and the community, the more likely the school is to develop an atmosphere which encourages students to higher achievement and educational aspirations.

In developing the contextual measure of PPIHS, the schools were ranked according to their median values on the three-item scale from the teacher questionnaire and then dichotomized at the median of the distribution. Table VII-6, based on data from the ten percent sample of students, indicates that PPIHS has

TABLE VII-5

ITEMS AND SUMMARY STATISTICS FOR THE SCALE OF PARENTAL PRESS FOR INVOLVEMENT IN THE HIGH SCHOOL

Items[a]	Percentages[b]	r[c]
134. Most parents in this school are apathetic to school policies. (F)	68.3	1.00
161. Parents of students here seem interested in their children's progress. (T)	83.4	1.00
166. Parents often ask for appointments with teachers to discuss their children's school work. (T)	66.7	1.00
Scale Reliability[d] =	.64	

[a] Numbers to left of items refer to their identification number in the teacher's questionnaire found in Appendix A.

[b] Percentages are those of the 100% sample of teachers (N=1,029) answering each item in the keyed direction shown in parenthesis to the right of the item.

[c] The coefficients represent the item-total score correlation which is Phi as a proportion of its maximum value.

[d] Scale reliability estimate was obtained from the Kuder-Richardson Formula 20.

a substantial effect on college plans and math achievement; thus it meets the first criterion as a source of school climate effects.

Table VII-7 indicates that PPIHS meets the second criterion; that is, it continues to exert an independent effect on the two attributes with the effects of ability and father's education removed.

Table VII-8 demonstrates conclusively that PPIHS functions as a source of variation in the climate effects on college plans and math performance. This conclusion is based on two findings. First, the significant effects of the climate dimensions on both dependent attributes with ability and father's education controlled (presented in Table VII-3) tend to disappear when PPIHS is introduced as an additional control. On the other hand, the significant effects of PPIHS on college plans and math performance with ability and father's education

TABLE VII-6

ZERO-ORDER DICHOTOMIZED EFFECTS OF PARENTAL PRESS FOR INVOLVEMENT IN HIGH SCHOOL ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT[a]

Independent Attribute	Dependent Attributes	
	College Plans	Math Achievement
PPIHS	.193	.194

[a] Results are based on a representative ten percent sample of the students in each school (N=2,053). Both effect estimates are significant at the .01 level.

controlled (shown in Table VII-7) persist when the climate measures are, in addition, controlled. In fact, the effects of PPIHS on college plans are slightly increased when each of the four available climate dimensions is held constant, and its effects on math performance are very slightly enhanced when Factors II and V are controlled.[17]

The isolation of PPIHS here as a source of variation in the effects of the climate dimensions on students' academic behavior is consistent with the results of a recent study by Gross, et al. (1966) on a number of social correlates of the "academic productivity" of elementary school children in seventy-four different schools. One of the variables which they found positively related

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[17] See footnote * in Table VII-8 for an explanation as to why the independent effects of Factor I and PPIHS are not presented. It should be noted that the effects of Factors II-V on college plans not only are not significant, but the sign of each has also changed. The same holds true for the effects of Factor II on math achievement. It does not seem plausible to attempt to explain the very slight tendency for the effects of PPIHS on the dependent attributes to increase with the climate dimensions held constant by viewing the climate dimensions as suppressant variables, because the latter have effects on the dependent attributes with ability and family background controlled (see Table VII-3). This is not the case for SES context of the school which was viewed as a suppressant variable in Table VII-4. Some other abstruse statistical explanation must account for this slight increase in PPIHS effects in Table VII-8. For example, multicollinearity (Blalock, 1963) may explain the phenomenon. Regardless of the appropriate statistical explanation, it does not alter the important substantive conclusion based on a highly consistent pattern of results: PPIHS is an important source of effects of school climate on college plans and math performance.

TABLE VII-7

SUMMARY EFFECTS OF DICHOTOMIZED PARENTAL PRESS FOR INVOLVEMENT IN HIGH SCHOOL ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED[a]

Independent Attribute	Weighted Effect Estimate of Independent Attribute on College Plans[b]	Weighted Effect Estimate of Independent Attribute on Math Achievement[c]
PPIHS	.111	.099

[a] Results are based on total population of students, not the ten percent sample. Both effect parameters are significant at the .01 level.

[b] The effects of father's education and ability on college plans are .216 and .175, respectively.

[c] The effects of father's education and ability on math achievement are .133 and .320, respectively.

to the criterion was the faculty's assessment of the degree of parental interest in the academic performance of their children.

Organizational Properties of the Schools as Sources of School Climates

The distinction between the variables considered in this section, which deal with curricular and facilities characteristics of the schools, and the cultural and socio-economic characteristics of the community and parents in the preceding section is an arbitrary one. That is, those communities which are "affluent", which make sizeable investments in cultural facilities, and financially support their schools to a high degree are communities which are likely to have the curricular innovations and facilities considered as source variables in this section. However, the correlation is far from perfect between such school characteristics and the economic resources of the community. Furthermore, since it is often assumed without evidence by many educators that the school characteristics to be considered in this section are conducive to academic excellence,[18] it seems worthwhile to consider them separately as sources of climate effects on the academic behavior of students.[19]

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[18] See, for example, Conant's controversial report (1959).

[19] All of the measures introduced in this section are based on data obtained from the principal's questionnaire presented in Appendix A.

TABLE VII-8

SUMMARY EFFECTS OF DICHOTOMIZED PARENTAL PRESS FOR INVOLVEMENT IN HIGH SCHOOL ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH CLIMATE DIMENSIONS, FATHER'S EDUCATION, AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED AND SUMMARY EFFECTS OF DICHOTOMIZED CLIMATE DIMENSIONS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH PARENTAL PRESS FOR INVOLVEMENT IN HIGH SCHOOL, FATHER'S EDUCATION, AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED[a]

	Climate Dimensions	Weighted Effect Estimates on College Plans of:		Weighted Effect Estimates on Math of:	
		Climate Dimensions[b]	PPIHS[c]	Climate Dimensions[b]	PPIHS[c]
I	Absence of Academic Emulation	*	*	*	*
II	Absence of Intell.-Estheticism	.018[e]	.143	.006[e]	.103
III	Cohesive and Egalitarian Estheticism	-.011[e]	.115	.016[e]	.092
IV	Absence of Scientism	.009[e]	.107	-.022[d]	.093
V	Humanistic Excellence	-.021[d]	.119	.007[e]	.095

[a] Results are based on total population of students, not the ten percent sample. All effect parameters are significant at the .01 level unless otherwise noted.

[b] The parameters in this column represent the effects of each climate dimension on the dependent attribute with PPIHS, father's education, and ability simultaneously held constant.

[c] The parameters in this column represent the effects of PPIHS on the dependent attribute with a given climate dimension, father's education, and ability simultaneously held constant.

[d] Significant at the .05 level.

[e] Not significant at the .05 level.

[*] The relationship between PPIHS and Factor I is so pronounced that there are no schools _low_ on PPIHS and _low_ on Absence of Academic Emulation. Consequently, the effects of PPIHS on the dependent attributes with Factor I, ability, and father's education simultaneously controlled cannot be computed. Conversely, the effects of Factor I on the dependent attributes with PPIHS, ability, and father's education controlled cannot be calculated. (The rank correlation between median school scale scores on PPIHS and raw scores on Factor I is -.79.)

A total of eleven different organizational properties of the school are introduced as possible sources of school climate. The first one--whether the school has developed its own special, experimental curriculum (Q. 23)--is immediately dismissed even though the schools showed some variation on the characteristic. For example, six of the schools had no special curriculum; however, a simple comparison of these institutions with the remaining fourteen revealed absolutely no patterning with the dependent attributes. Consequently, it was immediately ruled out as a source characteristic.

The following three facilities and curricular measures are dismissed as sources of climate effects on the dependent attributes because the schools do not show sufficient variation on them:

(1) Use of teaching machines as instructional devices (Q. 24).
(2) Volumes in school library (Q. 29).[20]
(3) Percentage of students on half-day sessions (i.e., double shifts) (Q. 72).[21]

Table VII-9 lists seven organizational properties on which the schools are sufficiently heterogeneous to permit their consideration as climate sources. The zero-order effect parameters for each of these characteristics on college plans and math achievement for the representative ten percent sample of students is also given. (Whenever there is sufficient heterogeneity across schools on these school characteristics, their effects are based on school quartile ranks standardized to dichotomous form.)

Inspection of the table reveals that three of the organizational properties are not significantly related (i.e., at the .05 level) to either dependent attribute: size of math and science classes, size of classes in other subject areas, and homogeneous grouping of students by ability (i.e., use of a tracking system in the school).[22] Furthermore, the effects of two of these three--size of classes in non-science areas and homogeneous grouping by ability--actually are in the direction opposite of that predicted.

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[20] This question is not an adequate measure of library facilities because the response alternatives were not presented in sufficient detail; all of the schools had more than 2700 volumes in their libraries. A broader range of categories would probably have yielded sufficient variation for the characteristic to be considered as a source. However, there is strong reason to believe that the facility would not be systematically related to academic output since Coleman, et al. (1966, Chapt. 3) in their national survey on schools, which showed large variation in library facilities, discovered that the number of volumes per student in the school library had only small and inconsistent relations to achievement.

[21] In only one of the twenty schools were the students on half-day sessions.

[22] Coleman, et al. (1966, Chapt. 3) also found no relation between tracking and achievement. They did not introduce into their analysis measures of the average size of classes.

TABLE VII-9

ZERO-ORDER EFFECTS OF SEVEN CURRICULAR AND FACILITIES CHARACTERISTICS OF SCHOOLS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT[a]

Independent Attributes[f]		Dependent Attributes	
		College Plans	Math Achievement
8.	Small Math and Science Classes[b]	.002[e]	.058[e]
9.	Small Classes in Non-Science Courses[b]	-.032[e]	-.023[e]
14.	Accelerated Curriculum for Superior Students[c]	.065[d]	.065[d]
15.	Opportunity to Obtain Advanced Placement and/or Credit in College[c]	.114	.105
34.	Homogeneous Grouping of Students by Ability[c]	-.041[e]	-.032[e]
36.	Acceleration Policy for Graduation[c]	.149	.142
43.- 44.	Percentage of Teachers with More than B.A. Degree[b]	.124	.076

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[a] Results are based on a representative ten percent sample of the students in each school (N=2,053). All effect parameters are significant at the .01 level unless otherwise noted.

[b] Effect estimates for these attributes are unweighted and obtained from school quartile ranks standardized to dichotomous form.

[c] Effect estimates for these attributes are unweighted and obtained from dichotomies, not school quartiles.

[d] Significant at the .05 level.

[e] Not significant at the .05 level.

[f] Numbers to left of independent attributes refer to their identification number in the principal's questionnaire found in Appendix A.

The four remaining characteristics in the table have significant effects in the expected direction on both dependent attributes; and Table VII-10 presents the effects of these four organizational properties on college plans and math achievement for the total population of students with ability and family SES controlled. A comparison of these data with those of the previous table indicates that although all four characteristics exert a statistically significant effect on math performance (and the same holds true for two of them with respect to college plans), much of their purported explanatory power is accounted for by family background and ability level of students. Consequently, they have only very limited substantive influence on students' academic behavior.[23] The one exception to this statement is the effect of teachers' educational level on students' educational plans and, to a lesser extent, on their math performance. The level of formal education by teachers in the school may be viewed as a crude indicator of the academic competence of the staff, a variable which previous research has shown to be related to student performance.[24]

Rather than presenting the mass of data in tabular form which would reveal the independent effects of each of the four attributes in Table VII-10 and each of the five climate dimensions on the two dependent attributes with the effects of ability and father's education removed, the important findings are summarized as follows:[25]

(1) The small and statistically significant effects of accelerated curriculum (Q. 14) on college plans disappear when each of the five climate dimensions is held constant. However, the effects of each of the climate dimensions (as shown in Table VII-3) are unaffected by controlling accelerated curriculum.

(2) The significant effects of educational level of teachers (Q.'s 43-44) on college plans are unaffected by controlling each climate dimension. Likewise, the effects of each climate dimension are almost totally independent of the educational level of faculty.

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[23] These findings are in accord with those of Coleman, et al. (1966, Chapt. 3): Eleven different characteristics of school facilities (similar to those considered in this section) accounted for only a small amount of variation in student achievement when family background differences were controlled.

[24] Some of this research is cited on p. 2 of Chapt. II.

[25] It should be understood that the effects of ability level and father's education are simultaneously controlled in assessing the relative effects of the four variables in Table VII-10 and the five climate dimensions on college plans and math achievement.

TABLE VII-10

SUMMARY EFFECTS OF FOUR DICHOTOMIZED CURRICULAR AND FACILITIES CHARACTERISTICS OF SCHOOLS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION AND SCHOLASTIC ABILITY SIMULTANEOUSLY CONTROLLED[a]

	Independent Attributes[e]	Weighted Effect Estimates of Independent Attributes on College Plans[b]	Weighted Effect Estimates of Independent Attributes on Math[c]
14.	Accelerated Curriculum for Superior Students	.028	.020
15.	Opportunity to Obtain Advanced Placement and/or Credit in College	-.003[d]	.043
36.	Acceleration Policy for Graduation	-.017[d]	.032
43.-44.	Percentage of Teachers with More Than B.A. Degree	.083	.046

[a] Results are based on total population of students, not the ten percent sample. All effect parameters are significant at the .01 level unless otherwise noted.

[b] Father's education and scholastic ability have approximately constant effects with each of the four independent attributes controlled. The effects of father's education vary from .237 to .243 and those for ability from .178 to .184.

[c] Father's education and scholastic ability have approximately constant effects with each of the four independent attributes controlled. The effects of father's education vary from .142 to .151 and those for ability from .325 to .327.

[d] Not significant at the .05 level.

[e] Numbers to left of independent attributes refer to their identification number in the principal's questionnaire presented in Appendix A.

(3) The small, significant effects of accelerated curriculum (Q. 14) on math performance disappear when each of the climate dimensions is controlled.[26] On the other hand, the effects of the five climate dimensions on math (presented in Table VII-3) are not reduced when accelerated curriculum is held constant.

(4) The statistically significant effects of advanced placement in college (Q. 15) on math scores disappear when Factors II, III, and V are each held constant; and although they remain statistically significant when Factors I and IV are controlled, they are reduced by approximately fifty percent. The effects of each climate dimension on math are reduced only a minute amount when the effects of advanced college placement are removed.

(5) The small, significant effects of an advanced policy for graduation (Q. 36) on math disappear when each of the five climate dimensions is controlled. However, the effects of the five climate dimensions remain almost totally intact when school policy regarding graduation is held constant.

(6) Overall, the effects of educational level of teachers (Q.'s 43-44) on math remain intact when each climate dimension is held constant. Likewise, the influence of each factor dimension on math is not appreciably reduced when teachers' educational level is controlled.

This host of findings leads to the conclusion that none of these four organizational properties is an important source of variation in climate effects on students' academic behavior since controlling their effects has no appreciable influence on the magnitude of the relationships between the climate dimensions and the two dependent attributes. However, controlling the effects of the climate dimensions tends to result in the disappearance of the small effects of these characteristics on the dependent attributes. The one exception to this generalization is the effect of educational level of the faculty on both college plans and math performance.

The above results suggest that the small effects of curricular and facilities characteristics on achievement and educational plans are a consequence of variation in community interest in academic excellence of the schools. That is, schools located in communities with a strong social commitment to quality education for their students are more likely to institute pedagogical innovations and procedures and to attract highly competent teachers than communities lacking such a social investment. Although there are no comprehensive measures of community interest available in the present investigation to permit a systematic testing of such a proposition, the scale measuring parental press for involvement in the school (PPIHS) can serve as an indirect indicator of this measure.

Table VII-11 shows the ecological (i.e., school level) correlations between (1) each of the four school characteristics in Table VII-10 and PPIHS and (2) these four characteristics and the SES context of the school (as measured by the proportion of students whose fathers had at least some college). Each of the four school characteristics has a stronger relationship with PPIHS than with the socio-economic composition of the student body; in fact, two of the four characteristics are not significantly related to the socio-economic composition

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[26] In fact, the positive sign of the effect parameter reverses when Factor I is controlled.

TABLE VII-11

PRODUCT-MOMENT CORRELATIONS OF FOUR CURRICULAR AND FACILITIES CHARACTERISTICS OF SCHOOLS WITH PARENTAL PRESS FOR INVOLVEMENT IN HIGH SCHOOL AND SES CONTEXT OF THE SCHOOL

	School Characteristics[f]	PPIHS[a]	SES Context of School[b]
14.	Accelerated Curriculum for Superior Students	.423[c]	.182[e]
15.	Opportunity to Obtain Advanced Placement and/or Credit in College	.494[c]	.489[c]
36.	Acceleration Policy for Graduation	.635[d]	.626[d]
43.-44.	Percentage of Teachers with More Than B. A. Degree	.470[c]	.269[e]

[a] Measured by the median score of the school on the three item scale.

[b] Measured by the proportion of students in each school whose fathers had at least some college.

[c] Significant at the .05 level.

[d] Significant at the .01 level.

[e] Not significant at the .05 level.

[f] Numbers to left of school characteristics refer to their identification number in the principal's questionnaire found in Appendix A.

of the school. The fact that each of the four school characteristics has a substantial relationship with PPIHS and higher than that with the socio-economic composition of the student body seems consistent with the proposition that the limited effects of the facilities and curricular characteristics on the dependent attributes are a consequence of community and parental interest and involvement in education rather than a source of variation in climate effects on students' performance and educational plans. Of course, it is possible that PPIHS is generated by school policy and organizational characteristics and is, therefore, a consequence of such characteristics rather than a source of them. However, such a contention hardly seems defensible. For example, it seems more plausible to argue that competent teachers (as measured by Q.'s 43-44 of principal's questionnaire) are attracted to schools in communities where the citizenry in general (and especially the parents) and school officials are socially committed to quality education than the converse.[27]

More evidence to suggest the validity of this argument is presented in Table VII-12, which is identical to Table VII-10 except that PPIHS is also held constant. A comparison of the effect parameters in the two tables indicates that holding constant PPIHS (1) "washes out" the small effects of an acceleration policy for graduation (Q. 36) on math scores, (2) reduces the small effects of advanced college placement (Q. 15) on math scores, and (3) reduces the effects of teachers' education on math achievement to a point of substantive insignificance even though the parameter remains statistically significant. In short, the extent of parental and community interest in the school appears to function as one source of variation in the small influence of various indicators of school curriculum and facilities on students' academic behavior.

Summary and Discussion

This chapter has been concerned with one of the three primary foci of the study--a search for sources of variations in climate effects on students' college plans and mathematics achievement. This phase of the analysis has been conducted by introducing factors from the community and the formal organization of the school.

The findings of the chapter are, for the most part, negative. That is, both community factors and properties of the school have overall been shown to be of little consequence in (1) accounting for variation in the dependent attributes or (2) explaining the moderate effects of the various dimensions of the educational and social climates of the schools on individual students' academic behavior.

The authors consider these negative findings to be among the most important of this research, however, for they challenge some commonly held assumptions

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[27] Of course, each of these statements is probably an oversimplification of the complexity of the situation, with a two-directional or "feedback" causal relationship more appropriate (McDill and Coleman, 1963, and Kirk, 1965, p. 40). That is, competent teachers who are strongly committed to academic excellence undoubtedly generate some parental and community interest in maintaining quality education. Nevertheless, the social investment of the parents and larger community in high academic standards would seem to be more important in recruiting and maintaining competent staff than teachers as a group are in generating community involvement in the schools. That economic investment on the part of the community (as contrasted with social investment) is not important in recruiting competent teachers is evidenced by the fact that the produce-moment correlation at the ecological level between beginning teacher salaries and percentage of teachers with more than a B.A. degree is -.11 ($.50 \; p > .30$).

TABLE VII-12

SUMMARY EFFECTS OF FOUR DICHOTOMIZED CURRICULAR AND FACILITIES CHARACTERISTICS OF SCHOOLS ON COLLEGE PLANS AND MATHEMATICS ACHIEVEMENT WITH FATHER'S EDUCATION, SCHOLASTIC ABILITY, AND PARENTAL PRESS FOR INVOLVEMENT IN HIGH SCHOOL SIMULTANEOUSLY CONTROLLED[a]

	Independent Attributes[e]	Weighted Effect Estimates of Independent Attributes on College Plans[b]	Weighted Effect Estimates of Independent Attributes on Math[c]
14.	Accelerated Curriculum for Superior Students	*	*
15.	Opportunity to Obtain Advanced Placement and/or Credit in College	**	.031
36.	Acceleration Policy for Graduation	**	.018[d]
43.-44.	Percentage of Teachers with More Than B.A. Degree	.061	.026

[a] Results are based on total population of students, not the ten percent sample. All effect parameters are significant at the .01 level unless otherwise noted.

[b] The effects of father's education, ability, and PPIHS with the one independent variable controlled in this column are .217, .171, and .096, respectively.

[c] The effects of father's education, ability, and PPIHS have approximately constant effects with each of the three independent variables controlled in this column. The effects of father's education vary from .128 to .132, those of ability from .316 to .319, and those of PPIHS from .092 to .097.

[d] Not significant at the .05 level.

[e] Numbers to left of independent attributes refer to their identification number in the principal's questionnaire found in Appendix A.

*The positive relationship between accelerated curriculum and PPIHS is sufficiently pronounced that there are no schools with an accelerated program and low on PPIHS. Consequently, the effects of the former variable on college plans and math with PPIHS, father's education, and ability simultaneously controlled cannot be computed.

**Effects of these independent attributes on college plans were not computed because there is no significant relationship between either of them and college plans with ability and father's education simultaneously controlled (See Table VII-10).

among educators regarding the influence of school factors on students' performance and aspirations and some of the findings of social scientists engaged in educational research of the type conducted here.

Before summarizing these findings the authors wish to raise a question which has been broached several times earlier in the report. Yet the problem is an important one and, therefore, deserves reconsideration here: Do the findings of this research have only limited generality because they are not based on a representative sample of U. S. high schools? As emphasized earlier in the report, no attempt is made to generalize the present findings to U. S. public high schools. However, some of the findings of this chapter which conflict with those of earlier research are based on a sample of schools which show more geographical, socio-economic, community, and ethnic diversity than the institutions in which these earlier studies were conducted. Furthermore, the findings reported in this chapter regarding the substantively insignificant influence of formal school characteristics on students' behavior are so consistent with those of the recent comprehensive national survey conducted under the auspices of the U. S. Office of Education (Coleman, et al., 1966, Chapt. 3) that it is difficult to conceive of the present results as being attributable to the nature of the sample of schools selected for study.

In this chapter it has been shown that a number of measures of "intellectual" or "cultural" facilities of the community are not sources of climate effects on the dependent attributes: libraries, community theatre, museums, art galleries, etc.

Likewise, two rigorous indicators of community financial support to the schools--average annual per-pupil expenditure and teachers' salaries--are of no consequence since they fail to show significant relationships with either of the dependent attributes. Most important of all, the socio-economic context of the community or school is not a source of variation in school climate effects on students' behavior. This important finding, which conflicts with one of the basic tenets of educational sociologists, is based on two pieces of information. First, both the SES context of the school and the geographical area served by the school have no effects on either college plans or math achievement when students' ability and family background are controlled. Secondly, holding constant SES context of the school does not decrease the effects of the climate dimensions on either dependent attribute with the influences of ability and family SES removed.

A substantial number of formal organizational properties of the school also fail to meet the criteria for climate sources of variation in students' academic behavior. Eleven different measures of school curriculum and facilities were considered as possible climate sources. Seven of these factors were dismissed for failing to meet one or more of three criteria: The schools are homogeneous on the characteristic; the zero-order effects of the characteristic on the dependent attributes are not significant; or the effects of the characteristic do not persist when ability and family SES are controlled. The remaining four factors have statistically significant but substantively negligible effects on one or both dependent attributes with the two relevant personal attributes controlled.[28]

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[28] This statement should be slightly qualified. The educational level of the faculty has a moderate effect on college plans. See Table VII-10.

However, none of these four factors affects the magnitude of the relationships between the climate dimensions and either dependent attribute. On the other hand, the statistically significant effects of three of them disappear when the climate dimensions are controlled. These results, combined with other data presented in the chapter, lead to the tentative conclusion that the small effects of curricular and facilities characteristics on the dependent attributes are a consequence of variation in parental and community interest in academic excellence rather than a source of variation in school climate effects on students' achievement and educational plans.

One contextual variable introduced in the chapter clearly qualifies as a source of school climate effects on the dependent attributes--the extent of parents' interest and involvement in their children's performance and in school policies. This measure,labeled "Parental Press for Involvement in the High School" (PPIHS) and based on teachers' assessments,is inferred to be an indirect measure of community and parent interest in education. The introduction of PPIHS into the analysis produced the following results:

(1) It has moderate and statistically significant effects on both dependent attributes with ability level and family SES controlled.

(2) Controlling the effects of each climate dimension fails to reduce the influence of PPIHS on either dependent attribute; however, removing the effects of PPIHS results in the disappearance of the effects of each climate dimension on both dependent attributes.

The general picture that the results of this chapter produce is that community financial investment in the school and school facilities and programs are of little importance in explaining the modest effects of various dimensions of the educational and social climate of the high school on students' academic behavior. The only contextual variable of any significance is the values and commitment that parents (and by inference, therefore, the larger community) have to quality education.

PART II. CLIMATE EFFECTS ON A MATCHED SAMPLE OF NEGROES AND WHITES

Chapter VIII

STATEMENT OF PROBLEM

Introduction

The remainder of this report (with the exception of the final chapter) is concerned solely with the second objective of the study outlined in Chapters I and II: an extension of the research to include an exploratory investigation of the relative effects of the various dimensions of school climate on the college plans, mathematics achievement, and intellectual orientations of Negro and white students who are individually matched on a number of relevant personal and family background variables.[1]

Hypotheses to be Tested

Despite the fact that this phase of the larger project is exploratory in nature, the analysis will be conducted by testing specific hypotheses. It should be emphasized, however, that the hypotheses are merely "working" propositions because, as noted in Chapters I and II, there is a dearth of knowledge about the academic behavior of Negro students in desegregated school settings. Therefore, the hypotheses are merely utilized as points of departure to provide guidance through the general problem area.

Hypothesis I: Within both racial groups a relationship exists between the various dimensions of school climate and the three dependent attributes.

The prediction in Hypothesis I is based on the mass of studies reviewed in Chapter II at both the high school and college levels and the findings of the parent research[2] which indicate that individual students tend to adopt the scholastic norms of the majority (Dittes and Kelly, 1956).

Hypothesis II: The relationship between the climate dimensions and college plans is more pronounced but the relationship between the climate dimensions and intellectual orientations is less pronounced among Negroes than among whites.

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[1] In other words, the measures of school climate, ability, and the dependent variables are the same as for the larger study presented in the preceding seven chapters.

[2] Throughout the remainder of this report the term "parent research" refers to the larger study reported in the first seven chapters.

The prediction relating climate dimensions to educational aspirations is based on the findings of a number of studies cited in Chapter II which reveal the entrenched desire of Negroes for education and their strong commitment to the idea that educational attainment leads to upward social mobility in American society. The fact that Negroes place high value on education is certainly not surprising given the fact that education is the only major channel of social mobility open to them. Thus, they should be especially sensitive to those features of the high school environment which encourage students to aspire to higher educational attainment.

The prediction for climate and intellectual orientations is somewhat tenuous in view of the total lack of systematic research on intellectualism among Negroes. However, Frazier (1962) argues that both Negro students and teachers are primarily concerned with the comforts of a middle-class way of life. He succinctly summarizes his point of view with the following statement (p. 74): "So teachers and students alike are agreed that money and conspicuous consumption are more important than knowledge or the enjoyment of books and art and music." Thus, Frazier's position is that Negroes view education as a means to the basic American goals of middle-class respectibility, prestige, and comfort and not an end in itself; and it provides the rationale for the prediction in Hypothesis II that Negroes are less responsive to the educational climate of the school than whites with respect to intellectual orientations.

Hypothesis III: The relationship between the climate dimensions and mathematics achievement will be less pronounced among Negroes than among whites.

This hypothesized difference is based on the experimental results of Irwin Katz and associates (1960, 1962, 1964, 1958, 1963, and in press) and the findings of other researchers cited by Katz (1964) and Pettigrew (1964) (discussed in detail in Chapter II) which offer substantial evidence of the extent to which the "minority" status of the Negro has depressed his level of academic achievement in this society. Of course, there is a host of social-psychological consequences of discrimination which could function to lower the academic performance of Negroes. Two of the more important of these detrimental consequences posited by Katz (1964) and Pettigrew (1964)--"low probability of success" and "social threat"[3]--would appear to act as mediating mechanisms to depress the relationship between various features of the educational and social environment of the school and the achievement level of Negroes. That is, in predominantly white high schools[4] it is highly likely that the Negro student is acutely aware that he is being constantly compared with white students. Such an awareness on his part is likely to result in low "probability of success" and high "social threat," leading to less achievement responsiveness on his part to the quality of the school climate than that of the white student.[5]

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[3] See p. 6 of Chapter II for a detailed definition of these two concepts.

[4] In none of the twenty schools in this sample do Negroes constitute more than eight percent of the student body.

Introduction of these two "intervening variables" leads to a corollary prediction to that contained in Hypothesis III.

Hypothesis IV: When levels of probability of success and social threat are statistically controlled, the differential achievement response of Negroes and whites to the climate dimensions should diminish or tend to disappear.

The inferior status of the Negro in American society appears to have had an adverse effect on his "functioning intelligence" as contrasted with measured I.Q.[6] That is, widespread discrimination against Negroes is likely to produce personality problems (especially low self-esteem and confidence) which impair their academic performance more than that of whites (Roen, 1960). If this proposition is valid and if Hypothesis III is verified, then the results predicted in Hypothesis IV should obtain given the fact that the two racial groups will be statistically standardized on the two "intervening" variables.

Again it should be emphasized that this phase of the larger study involves an exploratory analysis of academic differences between Negro and white students in predominantly white high schools. The fundamental and heretofore unexplored problem investigated is the relative impact of school environment upon educational plans, intellectual orientations, and academic performance of a matched sample of Negro and white students from the populations of the twenty schools included in the parent research. The following chapter contains a discussion of the methods appropriate to an investigation of this substantive problem.

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[5] It is also plausible to assume that the Negro students will have a lower level of probability of success and a higher level of social threat than the matched sample of whites with whom they are compared, given the fact that a majority of the former come from segregated school backgrounds. Unfortunately, data are not available on an individual basis for the Negroes to determine the extent to which their prior education has been in segregated school settings. However, informal conversations with principals and guidance counselors of the schools lead to an "educated guess" that the majority of them have had most of their formal education in segregated schools. Such a hunch is certainly consistent with the findings of Coleman, et al. (1966, p. 3) in their national survey.

[6] See Pettigrew (1964, p. 114) for a discussion of this problem.

CHAPTER IX

METHODOLOGY

Introduction

As noted in Chapter VIII, the objective of this extension of the parent research is to determine how the complexity of factors in the integrated high school influences the behavior of Negro students relative to whites. The parent research may appropriately be described as a field survey employing a methodology in which zero-order relationships between climate dimensions and dependent attributes are successively refined by higher-order partialing of both individual and contextual attributes. As has been demonstrated in Chapters V-VII, the sample size of the parent research permits the systematic control of a large number of relevant "test" variables simultaneously. However, applying such a design to the problem here is not feasible, given the fact that only 1.6% of the larger sample--327 students--are Negro. Thus, a different design must be employed in order to assess the impact of school environment on the academic behavior of Negroes relative to whites.

A design must be utilized which permits the control of several personal and background characteristics because any purported racial differences in climate effects could be attributable to uncontrolled systematic variation in personal and background characteristics. This is an especially acute problem here because Negroes and whites are likely to differ greatly on family background characteristics; for example, family structural integrity and socio-economic background--factors which are highly correlated with the dependent attributes. However, since there are only a small number of Negro students in the schools, a satisfactory solution is available; namely, individual matching of Negro and white students within school on a number of personal and background characteristics. Such a procedure is especially appealing since matching provides more precise control of such factors than the usual cross-tabulation techniques employed in survey research. Furthermore, there is no necessity to statistically control these factors in any subsequent Negro-white comparisons.

The factors chosen for individual matching were ability, sex, socio-economic status, year in school, age, and family structure.[1] Similarity between Negro and white cohorts was accomplished by individual matching. However, matching was done to equate the two groups rather than to compare the academic behavior of each student with that of his paired partner.[2]

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[1] Each of these characteristics has been shown repeatedly to correlate with educational aspirations and academic performance. See Lavin (1965) for a review of relevant studies.

[2] For a similar approach see Boyd (1952, p. 192).

Matching of Negroes and Whites

This procedure was accomplished in two steps. First, a file-searching routine on a computer was used to delineate a reasonable-sized array of whites as potential matches for each Negro. Secondly, matching was completed by searching each list of whites for the student most similar to a particular Negro student on all variables under consideration.

The distribution of Negroes in the larger sample is shown in Table IX-1. All of the 327 Negro students are located in fifteen schools. The percentages of Negroes in these fifteen range from only 0.1 to 7.9, and the total percentage in the fifteen is 2.2. Clearly, these are predominantly white high schools.[3]

Each matched pair has the following characteristics in common: high school attended, sex, and year in school. Since high school attended is common, so are school size, type of community, community population, and region of the country. Table IX-2 shows how the matched pairs are distributed with respect to school attended, sex, and year in school.

Matching on I.Q. was difficult because three different measures of intelligence were used. I.Q. raw and percentile scores were transcribed from students' permanent records. Whenever possible, matching was done on I.Q. raw scores. When this information was not available, it was necessary to use percentile scores;[4] and when neither was available the Abstract Reasoning test score was substituted. The results of matching[5] on I.Q. are presented in Table IX-3, where it may be observed that 244 pairs were matched on raw score, 21 pairs on percentile score, 61 pairs on AR raw score, and no information was available on one pair.[6]

Most sources dealing with quasi-experimental designs present extensive discussions of the problems associated with attrition of cases due to inability to

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[3] The total sample for the fifteen schools is 14,827; thus, 14,500 students were available as potential matches for the 327 Negroes.

[4] Ten points on I.Q. raw score and five points on I.Q. percentile score in either direction were tolerated by the computer program.

[5] Note in Table IX-3 and succeeding tables in this chapter that precision of matching is tested by using Chi-square on the Negro and white distributions. Since the purpose is to equate the two groups, even though this is accomplished by matching individuals, the results of matching are tested at the group level and not at the pair level.

[6] In this single instance, there was no measure of ability available for the Negro student. It could be argued that the observation should be discarded, but since there is only one case it can have no appreciable effect on the results. Furthermore, the Negro student is matched with his white partner on a number of other factors which are highly correlated with I.Q.

TABLE IX-1

DISTRIBUTION OF NEGROES AND SAMPLE SIZE OF THE LARGER STUDY, BY HIGH SCHOOL

High School Code Number	Negro Students	Sample Size of the Larger Study	Percent Negroes in School
01	3	428	0.7%
02	16	819	2.0%
03	26	985	2.6%
04	1	955	0.1%
05	0	1,372	-
06	19	1,849	1.0%
07	8	1,046	0.8%
08	6	2,127	0.3%
09	1	430	0.2%
10	1	517	0.2%
11	0	1,867	-
12	1	572	0.2%
13	0	942	-
14	1	626	0.2%
15	96	1,210	7.9%
16	0	904	-
17	97	1,590	6.1%
18	28	813	3.4%
19	0	433	-
20	23	860	2.7%
TOTAL	327	20,345	

TABLE IX-2

NEGRO-WHITE PAIRS OF STUDENTS MATCHED BY HIGH SCHOOL, SEX, AND YEAR IN SCHOOL

High School	Boys				Girls				Total
	9th	10th	11th	12th	9th	10th	11th	12th	
01	a		1	1	a	1			3
02	a	6	1	4	a	3	2		16
03	a	4	5	3	a	4	4	6	26
04	a	1			a				1
06	a	2	3	1	a	6	6	1	19
07	1	1	1	1	1	1	1	1	8
08	a	2	1	1	a	1	1		6
09	a				a	1			1
10		1							1
12								1	1
14				1					1
15	a	17	23	12	a	19	19	6	96
17	a	20	17	14	a	26	11	9	97
18	4	6	2	a	6	7	3	a	28
20	4	1	1	4	2	2	3	6	23
Total	9	61	55	42	9	71	50	30	327

[a] Schools did not have these grades when data were obtained.

match; however, because of the small proportion of Negroes in each of the fifteen schools, the problem of loss of cases is not encountered in this research. One problem with respect to I.Q., however, requires elaboration. The types of intelligence tests vary not only between schools but within schools. Nine different tests are represented in the data of Table IX-3: California Test of Mental Maturity, Cooperative School and College Ability Test (SCAT), Differential Aptitude Test (DAT), Kuhlman-Anderson Intelligence Test, Lorge-Thorndike Intelligence Test, Ohio State University Psychological Test, Otis Quick Scoring Mental Ability Test, Terman-McNemar Test of Mental Ability, and the Abstract

TABLE IX-3

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY VARIOUS MEASURES OF ABILITY

I. Q. Raw Score Matching[a]			I. Q. Percentile Matching[a]			A. R. Test Score Matching[a]		
Raw Score	Negro	White	Percentile	Negro	White	A. R. Test	Negro	White
55-59	3	0	05-09	2	1	00-02	8	4
60-64	4	6	10-14	6	8	03-05	12	16
65-69	6	3	15-19	1	0	06-08	20	20
70-74	6	7	20-24	0	1	09-11	17	15
75-79	14	11	25-29	1	0	12-14	4	6
80-84	21	15	30-34	1	2	15	0	0
85-89	23	29	35-39	2	1	Total	61	61
90-94	35	25	40-44					
95-99	28	46	45-49					
100-104	29	37	50-54	2	2			
105-109	33	25	55-59					
110-114	14	10	60-64					
115-119	8	13	65-69	2	1			
120-124	8	5	70-74	0	1			
125-129	5	4	75-79					
130-134	0	2	80-84	3	3			
135-139	2	2	85-89	1	0			
140-144	3	2	90-94	0	1			
145+	2	2	95-99					
Total	244	244	Total	21	21			
Chi-square = 19.50794, with 18 degrees of freedom $.50 > p > .30$			Chi-square = 7.61904, with 12 degrees of freedom $.90 > p > .80$			Chi-square = 2.42975, with 4 degrees of freedom $.70 > p > .30$		

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[a] Although various I.Q. tests are represented here, matching was always done within the same school and within the same grade. Thus, matching was completed using common instruments.

Reasoning Test. In addition, different cohorts were tested at different grade levels, and some percentile scores are based on state norms and others on national standards. However, in every instance the measuring instrument, the level (year in school) at which it was administered, and the norms on which the percentile scores are based are common to both members of a matched pair within any given high school. Matching on I.Q. was attempted only among those students already matched on school, year in school, and sex; consequently, the between and within school variations with respect to I.Q. tests do not affect the matching on this factor. Since this is the case, it is not necessary to present the results of matching on I.Q. by instrument, level, or norms. It is evident from the data presented in Table IX-3 that no significant differences exist between Negro and white students on I.Q. for any of the three categories of intelligence measures.

It should be noted at this point that the Negroes do not come from culturally deprived backgrounds,[7] and the whites in the sample, because they are matched with the Negroes on SES (see below), tend to come from essentially comparable backgrounds. Therefore, if the measured intelligence of the Negroes is inadequate because of the great variety of instruments used, the inadequacies are comparable for whites. Since the primary concern in this section of the research is with Negro-white differences, such an inadequacy should have no serious effects on the problem under investigation.

In matching on age, an attempt was made to avoid discrepancies of more than one year; and in the overwhelming majority of cases this was accomplished. In Table IX-4 it is demonstrated that no significant differences in age exist.

Matching on various measures of SES is shown in Tables IX-5 through IX-9. Most emphasis was placed on equating the two groups on father's education. However, SES is also dependent upon the occupation and income of the head of the household, and his status is ascribed to the remainder of the nuclear family. While all three are determinants of SES, income is to a great extent a function of occupation; and occupation is a function of education. In a sense then, education of the male head of the household may be considered the basic correlate of SES. Table IX-5 shows that the two groups are very well matched on father's education.

As a result of educational homogamy, the sample should also be comparable on mother's education (Nam, 1965). Table IX-6 indicates that while the match is not as precise on mother's as on father's education, there are no significant differences. However, as shown in Table IX-7, Negro and white fathers with common educational backgrounds hold significantly different occupations, with the former being concentrated in lower level blue collar positions. This difference would appear to be at least partly the result of racial discrimination in the occupational marketplace. In like manner, Table IX-8 reflects the income differences which are assumed to result from such discrimination. Given the demonstrated differences in father's occupation and family income, should it be

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[7] That is, the Negro students do not come from inner-city schools in large urban areas or from rural, southern segregated schools.

TABLE IX-4

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY AGE

Age	Negroes	Whites
14	9	11
15	67	59
16	109	116
17	86	100
18	47	36
19	6	4
Total	324	326
No response	3	1
Total	327	327

Chi-square = 3.83389, with 5 degrees of freedom
$.70 > p > .50$

TABLE IX-5

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY FATHER'S EDUCATION AS A MEASURE OF SOCIOECONOMIC STATUS

Answers to: "How much formal education did your father have?"

	Negro Responses	White Responses
Some grade school	25	20
Finished grade school	25	24
Some high school	77	85
Finished high school	87	95
Some college	45	42
Finished college	23	23
Attended graduate school or professional school after college	20	20
Don't know	25	16
Total	327	325
No response	0	2
Total	327	327

Chi-square = 1.47921, with 7 degrees of freedom
$.99 > p > .98$

TABLE IX-6

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY MOTHER'S EDUCATION AS A MEASURE OF SOCIOECONOMIC STATUS

Answers to: "How much formal education did your mother have?"

	Negro Responses	White Responses
Some grade school	17	6
Finished grade school	16	25
Some high school	77	62
Finished high school	119	137
Some college	36	36
Finished college	28	33
Attended graduate school or professional school after college	15	12
Don't know	19	14
Total	327	325
No response	0	2
Total	327	327

Chi-square = 11.60423, with 7 degrees of freedom
$.20 > p > .10$

TABLE IX-7

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY FATHER'S OCCUPATION AS A MEASURE OF SOCIOECONOMIC STATUS

Father's Occupation	Negro Responses	White Responses
Professional and technical	42	35
Farmers and farm managers	0	2
Managers, officials, and proprietors	29	54
Clerical	18	14
Sales	6	20
Craftsmen and foremen	60	88
Operatives	47	46
Private household workers	3	0
Service workers	33	23
Farm laborers and foremen	4	2
Laborers	68	29
Total	310	313
No response	17	14
Total	327	327

Chi-square = 44.66661, with 10 degrees of freedom
$.001 > p$

TABLE IX-8

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY TOTAL FAMILY INCOME AS A MEASURE OF SOCIOECONOMIC STATUS

Responses to: "My family's total yearly income is approximately:"

	Negro Responses	White Responses
Under $2,500	11	4
$2,500 - $4,999	49	29
$5,000 - $7,499	53	48
$7,500 - $9,999	37	31
$10,000 - $14,999	29	35
$15,000 or more	8	27
I don't know	134	147
Total	321	321
No response	6	6
Total	327	327

Chi-square = 20.71666, with 6 degrees of freedom
$.01 > p > .001$

TABLE IX-9

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY NUMBER OF BOOKS IN HOME AS A MEASURE OF SOCIOECONOMIC STATUS

Responses to: "Estimate the number of books in your home."

	Negro Responses	White Responses
None or few (0-25)	33	36
One bookcase full (26-100)	133	110
Two bookcases full (101-250)	92	97
Three or four bookcases (251-500)	54	66
Room full--library (501 or more)	10	16
Total	322	325
No response	5	2
Total	327	327

Chi-square = 5.00848, with 4 degrees of freedom
$.30 > p > .20$

concluded that important SES differences exist between the Negroes and whites in the present sample? There is no simple answer to this question. However, if one has to choose among the various measures considered while conducting research on educational plans, intellectual orientations, and achievement of students, then clearly the most important measure of SES for equating the groups is father's education. Furthermore, if at any point in the analysis there is reason to believe that a relationship is a function of a particular measure of SES on which the two groups are not equated, then the attribute will be held constant.

A final measure of SES, the number of books in the home, is shown in Table IX-9; the differences are not significant even though there is a tendency for white students to come from homes with more books.

In Tables IX-10 through IX-16 various measures of familial structure are tested for goodness of match. The two groups are not significantly different with respect to parental mortality (Table IX-12) and birthplace of respondent (Table IX-15); however, substantial differences exist in terms of number of siblings (Table IX-10), birth order (Table IX-11), parental divorce or separation (Table IX-13), residence of respondent (Table IX-14), and employment of mother (Table IX-16). These tables indicate that Negroes tend to come from larger families, to be an intermediate child, to have their parents divorced or separated, not to live with their mother and father, and to have their mother employed full-time more often than is true for whites. Differences in birth order are a function of number of sibs; an adolescent with numerous brothers and sisters is, by definition, more likely to be an intermediate child. Even ignoring birth order, there are too many facets of familial structure to hold all of them constant simultaneously in the analysis. It is not reasonable to combine several of them into an "intact-broken" dichotomy, for more precision is needed. Rather, it seems plausible to develop a comprehensive measure of family structure--"normal" vs. "non-normal." A "normal" family is, for the present analysis, one which meets all the following conditions: the parents are neither divorced nor separated, the respondent lives with mother and father, both parents are living, and the mother does not work full-time. The "non-normal" family is one which does not meet all four of these criteria. Respondents not answering one or more of the four related questionnaire items are treated as "no response" on the construct. As shown in Table IX-17, the two groups are significantly different with respect to familial normality, with a larger proportion of Negroes coming from non-normal families.[8] By combining these four family background variables, an analytically useful and substantively important indicator of family structure is obtained.[9] In order to compensate for the inability to successfully match Negro and white students on familial variables, two characteristics--number of sibs and familial normality--will be controlled where appropriate.

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[8] The inability to match the 327 Negroes with the large number of whites is viewed as further evidence of the deleterious consequences of a history of discrimination on the familial structure of the Negro American.

[9] The KR-20 coefficient for the construct is .56, a quite acceptable level of reliability for a small number of items.

TABLE IX-10

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY NUMBER OF SIBLINGS

Answers to: "How many brothers and sisters do you have?"

	Negro Responses	White Responses
None	19	29
One	50	86
Two	68	94
Three	48	54
Four	32	34
Five	31	13
Six	25	7
Seven	12	5
Eight	10	2
Nine or more	29	2
Total	324	326
No response	3	1
Total	327	327

Chi-square = 65.09107, with 9 degrees of freedom
$.0001 > p$

TABLE IX-11

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY BIRTH ORDER

Responses to: "Are you . . ."

	Negro Responses	White Responses
An only child	23	29
The oldest child in your family	113	120
The youngest child in your family	51	91
Between the youngest and oldest	135	87
Total	322	327
No response	5	0
Total	327	327

Chi-square = 22.51233, with 3 degrees of freedom
$.001 > p$

TABLE IX-12

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY PARENTAL MORTALITY

Answers to: "Are your parents living?"

	Negro Responses	White Responses
Both living	288	303
Only mother living	25	14
Only father living	10	7
Neither living	4	1
Total	327	325
No response	0	2
Total	327	327

Chi-square = 5.79849, with 3 degrees of freedom
$.20 > p > .10$

TABLE IX-13

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY PARENTAL DIVORCE OR SEPARATION

Answers to: "Are your parents divorced or separated?"

	Negro Responses	White Responses
Yes	73	42
No	242	272
Total	315	314
No response	12	13
Total	327	327

Chi-square = 10.10776, with 1 degree of freedom
$.01 > p > .001$

TABLE IX-14

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY RESIDENCE OF RESPONDENT

Responses to: "Do you live with . . ."

	Negro Responses	White Responses
Mother and father	205	258
Mother and stepfather	34	11
Father and stepmother	9	3
Mother only	53	35
Father only	10	8
Other	16	10
Total	327	325
No response	0	2
Total	327	327

Chi-square = 26.10287, with 5 degrees of freedom
$.001 > p$

TABLE IX-15

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY BIRTHPLACE OF RESPONDENT

Answers to: "Where were you born?"

	Negro Responses	White Responses
In this city or county	192	197
Outside county but in this state	39	35
Outside this state but in the U.S.	87	85
Outside the U.S.	6	9
Total	324	326
No response	3	1
Total	327	327

Chi-square = 0.89877, with 3 degrees of freedom
$.90 > p > .80$

TABLE IX-16

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY EMPLOYMENT OF MOTHER

Answers to: "Does your mother have a job outside the home?"

	Negro Responses	White Responses
Yes, full-time	129	101
Yes, part-time	72	55
No	119	163
Total	320	319
No response	7	8
Total	327	327

Chi-square = 12.54721, with 2 degrees of freedom
$.01 > p > .001$

TABLE IX-17

MATCHING OF NEGRO AND WHITE HIGH SCHOOL STUDENTS BY FAMILIAL NORMALITY (A CONSTRUCT)

Family Type[a]	Negro Frequencies	White Frequencies
Normal	126	191
Non-normal	187	120
Total	313	311
No response	14	16
Total	327	327

Chi-square = 27.09900 with 1 degree of freedom
$.001 > p$

[a] A normal family is defined as one in which (1) the parents are neither divorced nor separated, (2) the respondent lives with both mother and father, (3) both parents are living, and (4) the mother does not work full-time; a non-normal family is defined as one which does not meet all four of these criteria.

Measurement of Variables

Student's Self-Esteem

As noted at the beginning of Chapter VIII, the measures of several crucial variables--climate dimensions, ability, and the three dependent attributes--in this segment of the report are the same as those of the parent research. This section describes the development of the measure of a personal attribute which was not introduced in the parent research but which is crucial to the investigation of relative effects of school climate on the academic behavior of the two racial groups--self-esteem of the student. Literature relevant to this topic indicates that Negroes tend to have lower self-esteem than whites (Katz, 1964, Pettigrew, 1964, and Roen, 1960). Self-esteem is a highly complex phenomenon which is difficult to measure. The following discussion considers the problems confronted in attempting to develop an adequate indicator of this concept for the present study.

Four items in the student questionnaire were considered as possible indicators of self-esteem. It was originally intended to construct a scale using these items. However, as Table IX-18 shows, the items have low internal consistency. Therefore, the decision was made to use a more abbreviated indicator of the concept by considering each item in terms of its face validity.

Item 138 appears to be a reasonable measure of the concept. Rosenberg (1965, p. 17), in a ten-item Guttman scale of esteem included the following item: "On the whole, I am satisfied with myself." His item and Q. 138 appear similar. However, Rosenberg's wording of his item is less threatening to the subject than Q. 138. The same line of reasoning seems valid for Q. 266. Of course, it seems safe to assume that a respondent answering "high" to these two items would indeed have low self-esteem; and if a Guttman scale with a large number of items had been developed, these two might have proved useful in distinguishing individuals at the low end of the continuum from others.

Items 267 and 268 are the student's perception of teacher-evaluated ability and academic effort, respectively. The items require the respondent to perceive himself through "the eyes of the other." Thus, they are measuring the individual's academic view of himself in the classical sociological tradition of Mead (1913).[10] In perceiving teachers' evaluation of his ability or academic effort the student is providing an indirect indicator of a relevant aspect of his self-concept based on items which are less threatening than 138 and 266. Items 267 and 268 were combined into a single indicator of self-esteem. Believing that teachers view one as bright or a hard worker or both is considered an indication of high esteem: The dull student may have high esteem by means of hard work, and the non-industrious student may have it by being bright. Thus, believing that one is viewed as bright or works hard or both is defined for purposes of analysis as having high self-esteem.

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[10] For a relevant study of self-concept of ability and academic achievement see Brookover, Thomas, and Paterson (1964). They found that specific self-concepts of ability were related to specific areas of academic achievement with ability controlled.

TABLE IX-18

STUDENT SELF-ESTEEM ITEMS

Items[a] N=654	% High
138. Subjective self-esteem: feeling about self High = no desire to change Low = some or complete desire to change	45.6
266. Alienation from self: desire to trade with others High = no desire to trade Low = desire to trade	79.3
267. Student perception of teacher-evaluated ability High = bright Low = average or poor	16.1
268. Student perception of teacher-evaluated effort High = works hard Low = doesn't work hard	51.9
Scale Reliability[b]=.22	

[a] Numbers to left of items refer to identification number in student questionnaire in Appendix A.

[b] Scale reliability estimate was obtained from Kuder-Richardson Formula 20.

As noted above, the literature generally indicates that Negroes have lower self-esteem than whites.[11] As may be seen in Table IX-19, such is not the case in this study. This suggests that either the measure of esteem employed here has low validity or a selection factor is operating which places Negroes of above average self-esteem in predominantly white high schools. Perhaps a third interpretation is the most plausible: High self-esteem on the part of Negroes is a defense mechanism against discrimination.[12]

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[11] More recently, however, Coleman, et al. (1966, p. 281), in their comprehensive national study, found no lower academic self-confidence among Negroes than among whites.

[12] Evidence is presented in a later chapter that a larger percentage of the Negroes have college plans than the matched sample of whites. The same type of compensatory mechanism perhaps explains part of this difference.

TABLE IX-19

PERCENTAGES OF STUDENTS WITH HIGH SELF-ESTEEM IN VARIOUS SUB-SAMPLES

	Negroes in Matched Sample	Whites in Matched Sample	Total Sample of the Larger Study
Percentage responding either "bright" or "works hard" or both	80.4	61.2	72.8
(N)	327	327	18,242
No response	0	0	2,103
Total	327	327	20,345

One final consideration concerning the measure of self-esteem should be noted. One would certainly predict, on the basis of previous research, that a valid measure of the concept would be positively related to the three dependent attributes. Table IX-20 indicates that this is systematically the case for both groups, with the effect parameters for Negroes larger in two of three cases. These results lend predictive validity to the measure of the concept employed.[13]

Classification Scheme for Climate Measures and Dependent Attributes

The same procedure for classifying the fifteen schools on the five climate dimensions is utilized in this section of the analysis as that of the parent research: The fifteen schools were ranked on each of the five climate dimensions[14] and then collapsed into quartiles. The quartile rankings of the fifteen schools on the factors are presented in Table IX-21.

College plans are dichotomized in the same manner as for the parent research: Students with intentions to enroll as a full-time student immediately after high school (Q. 270 of student questionnaire in Appendix A) are classified as having college plans. Scores on the math test and intellectualism scale are dichotomized as closely as possible to the medians of the distributions for the 654 students. For the former attribute, students with C-scores within the range

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[13] This measure of esteem has appreciably larger effects on all three dependent attributes than the first two items presented in Table IX-18.

[14] See Chapter VI for the explanation of why Factor VI is deleted from the later stages of the analysis.

TABLE IX-20

EFFECTS OF ACADEMIC SELF-ESTEEM (MEASURED BY BRIGHT OR HARD-WORKER OR BOTH) UPON THREE DEPENDENT ATTRIBUTES FOR NEGRO AND WHITE STUDENTS IN THE MATCHED SAMPLE

Race	Negroes		Whites		Effects of Esteem	
Self-esteem	Low	High	Low	High	Negro	White
Proportion planning college full-time after HS	.328 (64)	.430 (263)	.210 (124)	.369 (203)	.102	.159
Proportion high on personal intellectualism	.406 (64)	.635 (263)	.266 (124)	.493 (203)	.229	.227
Proportion high on Mathematics Test C-score	.406 (64)	.566 (263)	.508 (124)	.650 (203)	.166	.142

3-10 are classified as "high" and those between 0 and 2 as "low." For the intellectualism scale, students with scores 3-6 are placed in the "high" category and those between 0 and 2 in the "low" category.[15]

The Problem of Non-Responses

This phase of the larger study would especially be hindered by missing data because the analysis is conducted on a matched sample, and if one member of a pair is lost due to a non-response, his matched mate would have to be discarded also. Otherwise, a bias would be introduced with respect to the matching variables. Given the small case base of 327 pairs, it is not feasible to discard observations because of missing data. Therefore, procedures are employed to provide responses for all respondents.

There are several methods in current use for handling non-responses. First, one may discard all observations in which any item of data is missing; even in a non-matched sample this can often result in the loss of a large proportion of cases. Secondly, one can run tabulations--as has been done thus far in this chapter--reporting the frequency of non-responses as a separate and distinct entry. Thirdly, one may arbitrarily assign non-answering respondents the mean

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[15] See p. 60 of Chapter III for the classification scheme for math performance and intellectualism in the parent research.

TABLE IX-21

QUARTILE RANKINGS FOR FIFTEEN SCHOOLS ON FIVE FACTOR SCORES FOR NEGRO-WHITE MATCHED SAMPLE

School Identification Number	Factors:	School Quartile Ranks for Factors I	II	III	IV	V
01		1	1	4	1	4
02		1	1	1	1	4
03		4	4	1	4	1
04		1	3	4	4	4
06		4	4	4	3	1
07		4	4	1	4	1
08		4	4	1	4	1
09		4	4	1	4	1
10		1	1	4	1	4
12		4	4	1	4	1
14		3	4	4	4	1
15		3	2	2	2	2
17		2	3	3	3	3
18		1	1	4	1	4
20		1	1	4	1	4

or median score for each variable. Fourthly, one might randomly distribute "unknowns" according to the observed distribution for those who do respond to a given item. Finally, one can assign values to non-responses on the basis of a regression analysis of the unknown variable on several other variables, using the data from those respondents who did respond to the variables under consideration. While this list is probably not exhaustive, it appears to represent the most widely used "solutions" to this problem. It is the regression technique which is employed in the present analysis. This technique, as applied to the present data, will be briefly described, and then consideration will be given to the merits of the approach.

Ordinarily, it would be necessary to determine which variables to use as independent ones in order to predict the one with missing data (the dependent variable). However, the nature of the present research design permits a simpler approach. Because this is a matched sample, those variables on which the sample was matched were used to predict values on variables for those respondents on whom information is missing. Specifically, race, sex, year in school, Abstract Reasoning Test raw score, father's education, number of siblings, and index of familial normality were entered in a stepwise multiple linear regression.[16] Initially, it was necessary to use regression analysis to fill in the missing data on any matching variables. Once this was accomplished the three measures of the dependent variables and other independent variables were regression analyzed to fill in missing data.

The position is taken here that regression analysis is the most sophisticated solution to the problem of missing data. No bias is introduced into the data by this technique, and case loss is non-existent. The technique is more precise than random assignment or assignment to the modal or average category. Even when the regression is poor (i.e., the multiple R is small), the technique supplies the mean.

The Statistical Procedure

The multivariate technique utilized here is the same as that for the parent research which was described in detail in Chapter III; namely, Boyle's slightly modified version (1966, unpublished) of Coleman's continuous-time, discrete-state stochastic model (1964, Chap. 6). In that discussion it was pointed out that the underlying model for Coleman's technique may be interpreted in the same manner as regression analysis or analysis of variance. It will be remembered that the model provides the researcher a technique for testing whether the effect parameters are significantly different from zero. However, this technique is not adequate for the main problem investigated here: Are the climate effects on the academic behavior of a matched sample of Negroes and whites significantly different? Before explaining why this is true, it is worthwhile to raise again here the perennial problem which was posed in Chapter III for the parent research: Are significance tests necessary or desirable? Several arguments have been advanced against such tests, couched in both statistical and substantive terms.[17] The present discussion will consider the controversy only in substantive terms. It is certainly possible to obtain statistical significance in a relationship which is not especially important from a substantive perspective. In fact, research efforts which are focussed only on significance are of little scientific merit. It is much more important to find both systematic and impressive (i.e., in terms of magnitude) relationships in survey research. In this phase of the study one could plausibly argue that it is desirable to report significance levels for the differences in magnitude of climate effects on the academic behavior of Negroes and whites. However, two related and difficult problems are faced in this connection. First, an appropriate test for the comparison of two effect parameters must be found. Secondly, the test must be appropriate for a matched sample. The use of ordinary statistical tests of significance, when applied to a matched sample (such as that for the Coleman technique) "... would lead the experimenter to discard the null hypothesis less frequently at any given level of significance than it should be discarded" (Maxwell, 1961, p. 26). Because the Negro and white samples are matched on a number of background variables, they are correlated samples; and since the samples are correlated, smaller differences are to be expected. Several statisticians have worked on this problem.[18] But they have either (1) dealt only with pairwise comparisons (the present work is concerned with group differences) or (2) considered matching to mean two or more measurements upon the same individual; for example, "Matching occurs because each sample contains exactly the same soldiers" (Cochran, 1950, p. 256). Therefore, the earlier work is not useful in terms of solving the present problem. The solution to the problem lies in developing an appropriate technique to test the significance of the difference between two effect parameters (a_i's) for two groups which have been matched in order to equate them.

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[16] The calculating scheme is presented in Efroymsen (1960, Chapt. 17). The 7094 computer program utilized adds a variable at each step (as opposed to programs which delete a variable at each step) until the F-level (.01) causes the stepwise procedure to halt.

[17] See, for example, Lipset, Trow, and Coleman (1956, pp. 427-432); Selvin (1957); McGinnis (1958); and Kish (1959).

To be able to test the significance between the effect parameters, it is necessary to calculate the variance of the difference. To simplify notation, let $\hat{\sigma}_N^2$ be the estimate of the variance of a_i for Negroes and $\hat{\sigma}_W^2$ be the estimate for whites. Then, when experimental groups are formed by pairing, by using sibs, or the same person at two points in time, the estimate of the variance of the difference is given by the following (McNemar, 1962, pp. 384-385):

$$\hat{\sigma}_D^2 = \hat{\sigma}_N^2 + \hat{\sigma}_W^2 - 2r_{xy}\,\hat{\sigma}_N\,\hat{\sigma}_W$$

When experimental groups are formed by matching distributions, the estimate of the variance of the difference is calculated as follows:

$$\hat{\sigma}_D^2 = \hat{\sigma}_N^2(1-r_{xy}^2) + \hat{\sigma}_W^2(1-r_{xy}^2)$$

The calculation of r_{xy} requires the computation of the multiple correlation coefficient between the a_i and all of the matching variables. While this does not involve pairwise analysis, the calculations--even with the use of electronic digital computers--are very tedious and expensive. Therefore, the methods for estimating the variance of the difference for experimental groups are neither feasible nor appropriate.

The remaining solution is to treat the Negro and white groups as statistically independent samples, which would result in the lowering of the power of the test. The pairwise analyses--the only examples to be presented in this research--of the dependent variables are presented in Tables IX-22, IX-23, and IX-24. Modest correlations exist for educational plans (Table IX-22) and math achievement (Table IX-24), but none for intellectual orientations (Table IX-23) when each individual is compared with his paired partner of different race. Clearly, the behavior of one can be partially predicted from that of his paired partner for two of the three dependent attributes. Thus, it is not appropriate to treat the matched groups as statistically independent samples and apply tests of significance based on such an assumption. Given this situation, the most appropriate indicator of confidence of the differential climate effects upon the behavior of Negroes and whites is that of consistency or the systematic nature of observed relationships. In addition, tests of significance will not be applied to climate effects on the behavior of students of either race, since such

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[18] Specifically, Stuart (1957), Walsh (1947), Wilson (1956), and McNemar (1957).

TABLE IX-22

EDUCATIONAL ASPIRATIONS OF MATCHED PAIRS
Answers to: "Are you planning to go to college?"

Negro Responses	White Responses (A)	(B)	(C)	(D)	(E)	
(A) no, never	38	8	13	2	14	75
(B) yes, but not right after high school	29	10	15	3	6	63
(C) yes, as a full-time student right after high school	41	9	62	7	15	134
(D) yes, as a part-time student right after high school	4	2	4	1	5	16
(E) undecided	21	4	7	1	6	39
	133	33	101	14	46	327

Negro Responses	White Responses C	A,B,D,E	
C = college-bound	62	72	134
A,B,D,E = not college-bound	39	154	193
	101	226	327

ϕ = .2774

ϕmax. = .8024

ϕ/ϕmax. = .3457

Chi-square = 25.164, with 1 degree of freedom .001> p

TABLE IX-23

INTELLECTUAL ORIENTATIONS OF MATCHED PAIRS

Scores on: Personal Orientation Toward Intellectualism Scale

		White Scale Scores							
		0	1	2	3	4	5	6	
Negro Scale Scores	0	4	5	9	4	5	1	2	30
	1	9	16	5	7	2	7		46
	2	6	11	16	9	10	5	1	58
	3	8	20	14	9	9	8	1	69
	4	12	15	15	15	10	1	1	69
	5	5	7	10	15	4	3	1	45
	6	2	3	2	3				10
		46	77	71	62	40	25	6	327

		White Scale Scores		
		0-2	3-6	
Negro Scale Scores	0-2	81	53	134
	3-6	113	80	193
		194	133	327

ϕ = .0190

ϕmax. = .9934

ϕ/ϕmax. = .0191

Chi-square = 0.118, with 1 degree of freedom $p > .50$

TABLE IX-24

ACADEMIC ACHIEVEMENT OF MATCHED PAIRS

Stanine Scores[a] on: Mathematics Test

Negro Stanine Scores	White Stanine Scores									
	1	2	3	4	5	6	7	8	9	
1	17	17	6	10	2	3				55
2	17	34	23	11	3	3	4		2	97
3	4	24	21	18	4	6	2	1		80
4		8	13	9	4	5	2			41
5		5	4	3	4	1				17
6	2	2	2	3	1	7			1	18
7		2	2	3	1		2	1		11
8			2	2		2		1		7
9							1			1
	40	92	73	59	19	27	11	3	3	327

[a] C-score conversion was carried out separately by sex and by year in school; C-scores were collapsed to stanine scores (Guilford, 1956, p. 503).

Negro Stanine Scores	White Stanine Scores				
	1-2	3-9			
1-2	85	67	152	ϕ	= .2954
3-9	47	128	175	ϕmax.	= .8826
	132	195	327	ϕ/ϕmax.	= .3346

Chi-square = 28.545, with 1 degree of freedom $.001 > p$

parameters are presented for the populations of the schools in the parent research. The effect parameters for the school populations can serve as benchmarks or standards with which those of the Negro-white sample can be compared. Tests of significance will thus be applied only to the relationships involving non-climate variables and the three dependent attributes.

Summary

This chapter has described in detail the method of selecting the sample of Negro and white students; the measurement of a very important personal attribute to be introduced in the analysis (students' academic self-esteem); the procedure for handling missing data for respondents; and the statistical technique employed in the analysis.

Within the larger sample of 20,345 students are 327 Negro students located in fifteen of the twenty schools. An equal number of whites have been matched with the Negro adolescents. Thus the sample consists of 327 pairs of Negro and white students from fifteen predominantly white high schools who have been matched on school attended, sex, year in school, I.Q., age, and SES (as measured by father's education). Matching was not successful on two variables which are to be controlled at appropriate points in the analysis: number of sibs and familial normality. The purpose of the matching is not to make pairwise comparisons but to equate the groups in order that Negro-white group differences may be assessed without the necessity of controlling the variables on which the sample was successfully matched.

In order to avoid loss of cases, non-responses have been eliminated by substituting values obtained from stepwise, multiple linear regression analysis using the matching variables as predictors.

The data are to be analyzed by means of the technique of multivariate analysis used in the parent research. This technique may be interpreted in terms of linear regression analysis or analysis of variance for dummy variables. Various techniques for testing the statistical significance of Negro-white differences with respect to climate effects were considered and then discarded.

In Chapter X a comparison is made of the Negro-white matched sample with the population of the fifteen schools from which they were selected. Preliminary racial differences with respect to the three dependent attributes are also considered. Finally, data are presented to test the first three working hypotheses.

Chapter X

PRELIMINARY DIFFERENCES

Introduction

Although the primary emphasis of this phase of the report is on the differential effects of school climate on the academic behavior of Negroes and whites, it is first necessary to compare the matched sample with the combined populations of the fifteen schools from which they were chosen. Such a comparison will give the reader a profile of these students relative to the remainder of the student bodies, and thus provide a baseline for comparison of the substantive results with those of the parent research and other studies in this general area. After the comparison is made, data are presented showing the effects of race on the three dependent attributes. This is followed by a presentation of results for testing working Hypotheses I, II, and III.

Nature of the Sample

As indicated in the previous chapter, the 327 Negroes and 327 whites were selected from the 14,827 students in those fifteen high schools containing one or more Negro students. It is difficult to conceive of these 654 students as a "sample" in the customary sense of the term, for the universe of Negro students is represented in the matched group and the whites represent a non-random sample of the 14,500 white students in the fifteen schools.

The peculiarities of the matched sample are reflected in Table X-1 which shows a number of important differences between them and the combined populations of the fifteen schools. First, a larger percentage of the student bodies have college plans and high scores on the math test than is the case for the matched sample. This is not surprising given the higher ability level (AR C-scores) of the school populations.[1] A smaller percentage of the white sample and a larger percentage of the Negroes have high scores on the intellectualism scale than is the case for the parent populations. Thus, with the single exception of Negro intellectual orientations, the populations of the fifteen schools are of higher ability, more oriented toward higher education and intellectualism, and higher achievers on the math test than those in the matched sample.

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[1] Although the two groups were individually matched within school on I.Q., the mean AR score for the 327 whites (4.0612) is significantly higher ($.01 > p > .001$) than that for Negroes (3.6820). This discrepancy could be explained by several factors. First, although the two members of each pair were matched on the same I.Q. test, eight different tests (other than the Abstract Reasoning Test) were involved in the matching, and the lack of comparability among them could have contributed to the significant difference. Secondly, the AR test could be a less valid measure of intelligence than those employed in the matching. Thirdly, the AR and MATH tests were not administered to sixteen whites and twenty-six Negroes in the matched sample, and the multiple linear regression procedure which was used to obtain the AR scores for these subjects could have failed to accurately predict them. Regardless of what factor or combination of factors account for the discrepancy, the authors contend that ability for the two groups is more precisely controlled by the matching procedure than could have been accomplished by statistical procedures such as partial correlation or cross-tabulation.

TABLE X-1

COMPARISON OF THE MATCHED NEGRO-WHITE SAMPLE
WITH THE COMBINED POPULATIONS OF THE FIFTEEN SCHOOLS

Variable[a]	All Fifteen High Schools	Matched Sample Negro Respondents	 White Respondents
Percentage planning to go to college "as a full-time student right after high school" (Q. 270)	57.3% (14,611)	41.0% (327)	30.9% (327)
Percentage with high scores (3-6) on Personal Orientation Toward Intellectualism scale	46.8% (14,675)	59.0% (327)	40.7% (327)
Percentage with high (3-10) Mathematics test C-scores	81.2% (13,809)	53.5% (327)	59.6% (327)
Mean Abstract Reasoning test C-scores	5.1423 (13,809)	3.6820 (327)	4.0612 (327)
Median number of siblings (Q. 130)	2.3259 (14,730)	3.5313 (327)	2.5053 (327)
Percentage of students from "normal" families (Familial Normality construct)[b]	c	38.5% (327)	59.0% (327)
Percentage of families in which parents are neither divorced nor separated (Q. 126)	89.5% (14,350)	77.4% (327)	86.9% (327)
Percentage of families in which adolescent lives with mother and father (Q. 127)	82.0% (14,715)	62.7% (327)	79.2% (327)
Percentage of families in which both parents are living (Q. 124)	93.0% (14,784)	88.1% (327)	93.3% (327)
Percentage of families in which mother does not work full-time (Q. 125)	71.8% (14,655)	60.2% (327)	69.1% (327)
Percentage whose fathers received at least some college (Q. 120)	42.0% (14,753)	26.9% (327)	25.9% (327)

[a] Numbers in parentheses in this column refer to the item number in the student questionnaire in Appendix A.

TABLE X-1 (continued)

[b] A "normal" family is defined as one in which (1) the parents are neither divorced nor separated, (2) the respondent lives with both mother and father, (3) both parents are living, and (4) the mother does not work full-time.

[c] The index of family normality was not constructed for the combined populations of the fifteen schools. However, data are presented for the four items used to construct the index.

In terms of family background characteristics, the Negro-white sample are more likely to come from larger families, non-normal families, and families of lower SES (as measured by father's education) than the school populations. These differences indicate that the lower ability and achievement levels of the matched sample are partly a function of family background attributes.

Although it has been possible to compare the Negro-white sample with the student populations of the fifteen schools, it is not possible to compare the 327 Negro students with all high school-aged Negro youth who might have attended one of these fifteen institutions. In other words, it would be highly informative to compare the Negroes in this sample with those attending predominantly or totally Negro high schools.[2]

A relevant study in this area was conducted by Weinstein and Geisel (1961). They gathered data on eighty-eight Negro families in a southern community whose children were eligible to attend desegregated schools on a "grade-a-year" plan. One of the critical differences between parents who elected to send their children to predominantly white schools and those not making such a decision was that the former group were more likely to be "social pioneers."[3] No data are available here to attempt a replication of their findings. However, the very fact that these Negro students are enrolled in such overwhelmingly white schools provides some indirect evidence of a "pioneering" perspective.

More important than the comparisons between the matched sample and the school populations are the Negro-white differences with respect to the three dependent attributes. These differences are presented and discussed in the next section.

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[2] Since it is known that most American youth attend schools which are predominantly segregated, the Negroes in this sample are a select group living in areas which enable them to attend predominantly white, better-than-average, public high schools.

[3] In addition, the latter were more likely to be characterized by (1) presence of older, ineligible children, (2) a higher degree of social alienation, and (3) lower SES.

Effects of Race on the Dependent Attributes

Table X-2 shows that Negroes plan at a significantly higher rate than whites to attend college. Prior research, discussed in Chapter II, has shown that, regardless of region of the country and whether they are in integrated or segregated schools, Negroes are more educationally oriented. Therefore, the extent to which Negroes have college plans at a rate higher than whites of similar circumstances may be viewed initially as a function of the unique experiences and values that are a consequence of being Negro and not as a function of being in segregated or integrated schools. The level of their educational plans may be inflated for a variety of reasons. First, college plans for Negroes could be more "aspirational" and less "factual" than they are for whites and, thus, may be less indicative of future behavior for Negroes.[4] The results may, then, be a reflection of a lack of realism about the costs of college in terms of prior preparation, intellectual effort, finances, time, etc., resulting from their membership in a subculture with little experience with higher education.[5] That education is one of the Negro's few major avenues of upward social mobility in American society may account for much of the difference in educational plans between Negro and white students in this sample. If Negro college plans are inflated, undoubtedly the fact that education is their major channel of mobility accounts for the inflation. Or, it may be that their aspirations are a function of their high academic self-esteem. It has already been stressed that these Negro students are in a favored position relative to most Negro high school students. For the most part they live in middle-class cities or suburbs and are attending white middle-class high schools. These facts are not likely to be lost on these youngsters nor on their parents, most of whom do not themselves have the advantage of education beyond high school. Nor is it likely that the presence of these particular Negroes in white middle-class high schools is entirely fortuitous. If their parents have sufficient mobility aspirations to live in predominantly white communities and to send their children to predominantly white high schools, they are likely also to perceive education in the light of its mobility implications. It is argued that such parents, more than the parents of white students of similar background, will instill in their children the importance of education, and will encourage, cajole, and otherwise foster such values in their children. One of the more important of these values is a high regard for one's ability--a positive self image.

The observed difference may also be a function of the value system of the Negro community. That is, if the adult Negro community, as a social collectivity, values education as the means to overcoming racial barriers experienced by their

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[4] Sewell's follow-up study (1964) of Wisconsin high school seniors showed that more than ninety percent of those planning to attend college actually enrolled. However, his sample was predominantly white; also, it is logical that college plans among seniors would be more crystallized and realistic than among underclassmen.

[5] Less than five percent of all college students are Negro, yet 11.5 percent of college-aged persons are Negro (Coleman, et al., 1966, p. 23).

TABLE X-2

EFFECTS OF RACE ON THE DEPENDENT ATTRIBUTES

Dependent Attributes	Negro Respondents	White Respondents	Effect Measure for Race[a]
Percentage planning to go to college	41.0% (327)	30.9% (327)	$a_i = .101$ $(.01 > p > .001)$
Percentage high on Personal Orientation Toward Intellectualism scale	59.0% (327)	40.7% (327)	$a_i = .183$ $(.001 > p)$
Percentage with high Mathematics test C-scores	53.5% (327)	59.6% (327)	$a_i = -.061$ $(.10 > p > .05)$

[a] The sign of a_i is positive when Negroes are higher on the dependent variable and negative when whites are higher.

generation, then the Negro students could be reflecting the educational aspirations urged by their elders. These various interpretations are considered at different points in the analysis.

Table X-2 also shows that a significantly larger proportion of Negroes than whites have high intellectual orientations. This dependent attribute is similar to the first in that it may be viewed as attitudinal, not behavioral. That is, Negroes may have higher intellectual values than their white counterparts because they view intellectualism as important to college attendance and academic success. Furthermore, it may well be that adhering to intellectual values is of aid in maintaining self-esteem when confronted with racial discrimination.

There is a small racial difference in the proportion high on math achievement; by 6.1 percent $(.10 > p > .05)$ whites exceed Negroes.[6] When the inability to match on family background variables is taken into account (by statistical controls) in the following chapter, resulting in a diminution of this modest racial difference, consideration will be given to the implications of family background for the academic behavior of Negro youth.

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[6] A comparison of the mean math C-scores of Negroes (2.9847) and whites (3.2171) is significant at a slightly higher level $(.05 > p > .04)$; and the use of the Chi-square test to compare the distributions of math C-scores ($X^2 = 11.373$ with d.f. = 9) shows less difference $(.30 > p > .20)$.

Related research on Negro-white differences in achievement with subjects matched on background factors is sparse. Although several studies have compared levels of Negro and white academic achievement before and after desegregation, few have made racial comparisons with ability controlled. After matching Negroes and whites on ability, SES, and other relevant factors, Samuels (1958) found significant differences in verbal achievement to be greater than those in non-verbal achievement. In the recent national survey, Coleman, et al., (1966, p. 20) also demonstrated that whites achieve at appreciably higher levels than Negroes; however, the difference on non-verbal achievement was strikingly similar to that on verbal achievement. In addition, Samuels concluded that Negro-white differences tend to become static or even to decrease slightly at the end of the second integrated year, but the national survey, ignoring degree of integration of schools, showed the gap to increase as students move from grades six to nine to twelve.

Thus, consensus is found only in terms of white achievement levels exceeding those of Negroes. While the findings of the present research are consistent in direction with earlier efforts on Negro-white differences, the magnitude of the present difference appears to be less than that discovered elsewhere. This smaller discrepancy would appear to be a function of the degree of precision of matching for the two groups.

Having compared the matched sample with the populations of the fifteen high schools from which they were selected and having compared the two racial groups with respect to the three dependent attributes, attention is now turned to preliminary climate effects. However, the reader should keep in mind in evaluating the results in the remainder of this chapter the important fact that control of background factors on which the two groups could not be matched is postponed until the following chapter.

Within-Race Climate Effects

The basic proposition in climate-oriented, educational research is that the academic atmosphere of the school exerts an effect on the academic behavior of its students. Typical of such a contention is the first working hypothesis considered here:

> Hypothesis I: Within both racial groups a relationship exists between the various dimensions of school climate and the three dependent attributes.

The hypothesis will be considered first for Negroes and then for whites. Table X-3 shows that the fifteen effect parameters displayed for Negroes are highly systematic; that is, each is in the direction predicted by the content of the factor, with a magnitude roughly comparable to that found in the parent research (see Tables IV-1, IV-2, and IV-4). The climate effects for college plans are stronger than those for the other two dependent attributes. On the grounds that educational plans tend to be somewhat "idealistic" for the Negro students, it is to be expected that the attribute would be more susceptible to environmental influence than the more rigorous measure of achievement. Earlier research, cited throughout this report, suggests why the climate effects are greater for college plans than for intellectualism. College attendance is highly valued by adolescent

TABLE X-3

EFFECTS OF FACTOR SCORE QUARTILES ON COLLEGE PLANS, INTELLECTUAL ORIENTATIONS, AND ACADEMIC ACHIEVEMENT OF NEGRO RESPONDENTS

	Climate Dimensions	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		College Plans	Intellectual Orientations	Math Achievement
I.	Absence of Academic Emulation	-.137	-.075	-.107
II.	Absence of Intell.-Estheticism	-.131	-.093	-.090
III.	Cohesive and Egalitarian Estheticism	.203	.084	.100
IV.	Absence of Scientism	-.144	-.103	-.080
V.	Humanistic Excellence	.140	.072	.103
	Base (N)	(327)	(327)	(327)

peer groups but adherence to intellectual values is not (McDill and Coleman, 1963). Furthermore, the parent research has demonstrated that intellectualism is of lower salience to students than either college attendance or achievement.

Turning now to the comparable data for the white students in Table X-4, it can be seen that here, too, each of the fifteen effect parameters is in the expected direction. Of special relevance is the finding that the effects are consistently higher for educational plans than for the other two attributes. This finding reinforces the earlier cited research regarding the great importance of college attendance in general and also indicates the extent to which the scholastically inferior whites (i.e., in comparison with the combined populations of the fifteen schools shown in Table X-1) are influenced by the academic quality of the school.

In summary, the evidence for the first hypothesis is overwhelming. In every instance for both racial groups (a total of thirty tests), the climate effects are in the predicted direction.

TABLE X-4

EFFECTS OF FACTOR SCORE QUARTILES ON COLLEGE PLANS, INTELLECTUAL ORIENTATIONS, AND ACADEMIC ACHIEVEMENT OF WHITE RESPONDENTS

Climate Dimensions	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
	College Plans	Intellectual Orientations	Math Achievement
I. Absence of Academic Emulation	-.224	-.025	-.110
II. Absence of Intell.-Estheticism	-.182	-.047	-.113
III. Cohesive and Egalitarian Estheticism	.289	.139	.156
IV. Absence of Scientism	-.175	-.083	-.112
V. Humanistic Excellence	.218	.020	.107
Base (N)	(327)	(327)	(327)

Preliminary Differences in Climate Effects by Race

In the first part of the second working hypothesis, it is predicted that Negroes experience stronger climate effects on their educational plans than is the case for whites:

Hypotheses II (a): The relationship between the climate dimensions and college plans is more pronounced among Negroes than among whites.

Climate effect differences are obtained by comparing the parameters for Negroes with those of whites (see Table X-5).[7] Whereas Tables X-3 and X-4

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[7] Note in this table and subsequent ones displaying differential effects by race, the sign of the difference (△ N-W) indicates which racial group experiences the stronger effect in the direction expected on the basis of the content of the factor. When the effects for Negroes are greater, the sign is positive (+); when the effects for whites are larger, the sign is negative (-). If Tables X-5, X-6,

TABLE X-5

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES ON COLLEGE PLANS

	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
Climate Dimensions	Negro Respondents	White Respondents	Δ_{N-W}
I. Absence of Academic Emulation	-.137	-.224	-.087
II. Absence of Intell.-Estheticism	-.131	-.182	-.051
III. Cohesive and Egalitarian Estheticism	.203	.289	-.086
IV. Absence of Scientism	-.144	-.175	-.031
V. Humanistic Excellence	.140	.218	-.078

display the effects for one race, Table X-5 (utilizing the same information) permits a comparison of the climate effects for the two racial groups. It is the case that whites experience stronger climate effects with respect to each of the five factors. This is true despite the fact that the Negroes are more likely to state that they have definite college plans. Although the differences in Table X-5 are moderate, they are systematically in the direction opposite to that predicted. Stated differently, the Negro students tend to be less conforming to climate influences on their educational plans than are the whites. Or stated obversely, the Negro students tend to be more independent of variation in social pressures inherent in the educational and social climates of schools than are their white counterparts.

Marie Jahoda's critical evaluation (1959) of research and theory on conformity vs. independence by social scientists is of aid in explaining the failure of Hypothesis II (a) to be verified.[8] Her review of the theory and literature in the area of conformity-independence leads her to the conclusion that a critical determinant of the extent of conformity or independence to social influences has

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and X-7 had been generated by inclusion of both racial groups, measures of effects for each of the climate dimensions and measures of the effect of race would have been obtained. Since the concern is with differential Negro-white climate effects and not with racial effects with climate effects controlled, it was necessary that the tabulations be run separately for each racial group.

[8] The authors are indebted to Erling Schild for bringing this article to their attention.

been ignored in the plethora of experimental studies on the topic: emotional investment of the subject in the issue the researcher is attempting to manipulate. This, she contends, partly explains why research in experimental psychology has been so successful in producing conformity in subjects; studies have been restricted almost totally to issues in which the subject has no investment.

Applying Jahoda's frame of reference to the relationships between variables involved in Hypothesis II (a) would lead to the prediction opposite to that contained in the proposition; namely, with respect to college plans Negroes would be less responsive to variations in school climate than whites because Negroes have more emotional investment in college attendance than whites of comparable ability and similar family SES. Throughout this report, research has been cited documenting the great importance to both Negro students and their parents[9] of higher education as the primary means of social mobility and attaining first-class citizenship. Although evidence is lacking in the present data to measure rigorously the relative degree of emotional investment of Negroes and whites in college attendance, it would be absurd to argue that Negroes of comparable ability to whites (and a group of Negroes which is clearly superior to Negro students in general with respect to ability and from less socially disadvantaged backgrounds) do not have more emotional investment in college attendance. This argument takes on added plausibility if one views the measure of college plans here as reflecting aspirations as well as crystallized intentions. To paraphrase Jahoda (p. 113): College plans and/or aspirations have a place in the life space of Negroes with considerable salience before the campaign begins (i.e., before they enroll in predominantly white high schools).

One other variable which may be of importance in explaining the results of Table X-5 is the racial composition of the school. It may be that the educational and social climates of predominantly white high schools have stronger effects on college plans of whites than of Negroes, while the opposite holds true for predominantly Negro schools. While this is a crucial problem for investigation--from the perspectives of (1) policy implications for educators and (2) contributing to the theory of social processes which explain variations in the academic behavior of individual students--it is not feasible to include it in the present analysis because of the restricted variation in the racial composition of the schools.[10]

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[9] Although data were not obtained from parents for these respondents, there is evidence from the student questionnaire that a larger percentage of the Negroes are subjected to strong parental influence to attend college than are their white counterparts. In Q's 271-272, students were asked "How does each of your parents feel about your decision with respect to college?" For the Negro sample, 47.4 percent report that their fathers have strongly encouraged them to attend, while 62.4 percent of them state that their mothers have done so. The corresponding percentages for whites are 41.0 and 43.7.

[10] James McPartland, a graduate student in the Department of Social Relations at Johns Hopkins, is currently conducting research on this neglected topic for his doctoral dissertation utilizing data from the recent nation-wide study by Coleman, et al. (1966).

In the second part of Hypothesis II, it is predicted that the intellectual values of whites are affected to a greater extent by school climate than are those of Negroes:

Hypothesis II (b): The relationship between the climate dimensions and intellectual orientations is less pronounced among Negroes than among whites.

A comparison of Negro-white climate effects is presented in Table X-6. For four of the five factors the differences are in the direction opposite to that predicted. That is, Negroes experience stronger effects with respect to all dimensions except Factor III. The magnitude of the differences is certainly not impressive; yet, given the consistency (four out of five tests), they merit some attempt at explanation. One distinction exists between Factor III and the other four factors which is of importance in such an attempt. The former, because it contains an element of egalitarianism, may, for present purposes, be interpreted as a status factor. Therefore, the data of Table X-6 indicate the two following relationships: (1) With respect to the status factor white students experience stronger effects than do Negroes; (2) With respect to the non-status factors, Negroes experience stronger effects. Given this distinction, what interpretation can be placed on the data of Table X-6? The above relationships, together with the facts given below, suggest one possible explanation; namely, that the Negroes in this sample, relative to their white counterparts, have assumed the role of intellectuals in these schools:

(1) Previous researchers (Coleman, 1961) have contended that intellectualism is not rewarded in the adolescent social system.
(2) An inverse relationship between status in school and intellectualism was demonstrated in Chapter VI of this report.
(3) Negro students in this sample represent an out-group in these predominantly white high schools.[11]
(4) A larger porportion of Negro students than whites have high scores on the intellectualism scale.

Since they are excluded from the dominant white status systems of the schools, which do not in general reward intellectualism, one would expect them to be more

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[11] That the Negroes are an out-group in these predominantly white schools is demonstrated by the following data: The median number of white friendship choices received by Negroes is .634 (N=255), and the median number of white friendship choices received by whites is 2.933 (N=255). Since these are virtually all-white schools, one must assume a dominant "white status system." Therefore, the data represent sociometric choices made by white adolescents. As noted in Chapter VI, budgetary limitations precluded the coding and tabulation of sociometric data for all schools. Of the fifteen schools having Negroes, sociometric data are available for eight. These eight schools contain 255 pairs, or 78 percent of the matched sample. For each sociometric item coded, choices received were tabulated in three different ways: Negro choices, white choices, and total choices.

TABLE X-6

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES ON INTELLECTUAL ORIENTATIONS

Climate Dimensions	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
	Negro Respondents	White Respondents	Δ_{N-W}
I. Absence of Academic Emulation	-.075	-.025	.050
II. Absence of Intell.-Estheticism	-.093	-.047	.046
III. Cohesive and Egalitarian Estheticism	.084	.139	-.055
IV. Absence of Scientism	-.103	-.083	.020
V. Humanistic Excellence	.072	.020	.052

responsive to non-status climate dimensions with respect to intellectual values than their white counterparts.[12]

In addition to the Negroes having higher scores on the intellectualism scale than the whites, they are more prone to view intellectualism as an important criterion for status. For example, the mean rank among Negroes of "knowing a great deal about intellectual matters" (Q. 162) is higher than that for whites.[13]

Perhaps more important is that Negroes rank "being an athletic star (boys) (Q. 161) and "being a cheerleader" (girls) as less important for social recognition than do the whites. Another relevant datum is that 68.3 percent of the

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[12] In School 17, where 6.1 percent of the student body was Negro, the research staff, in two days of observation, noted a well-defined and institutionalized, segregated seating pattern in the cafeteria. Similar but less marked patterns were observed in other schools.

[13] However, both groups rank this item as the least important of the six. The mean Negro rank is 4.572 and that of whites is 4.933 where a rank of "1" is most important.

Negroes consider that being a teacher's assistant in class "would be something to be proud of" (Q. 155) while 53.9 percent of the whites take such a position. These results clearly indicate that the Negroes profess more adherence to intellectualism than the whites.

Finally, the Negroes demonstrate more academic diligence and are less restricted by peer group pressures: 72.5 percent of the Negroes as contrasted with only 52.3 percent of the whites spend at least one and one-half hours daily on homework outside of school (Q. 24). Asked about having to decide between themselves and the group, 31.5 percent of the Negroes as contrasted with only 19.3 percent of the whites responded "I always decide for myself" (Q. 139).

It has been demonstrated rather conclusively that the Negro students are an out-group in these predominantly white schools. They also profess a greater adherence to intellectualism; they view intellectualism to be more important as a criterion for status; they claim to expend more effort in academic matters; and they contend they are less responsive to the pressures for conformity from the immediate peer group. Because they are outside of the dominant student status systems of the schools which generally do not reward intellectualism, the Negro students, it is argued, are more responsive to variations in non-status-related school climates and less responsive to variations in status-related climates with regard to their personal values toward intellectualism than are whites.

In the presentation of data for Hypothesis II (a) and II (b), it has been found that in both instances the results are inconsistent with the predictions. For both dependent variables the Negro students have higher scores. This would suggest that, overall, they have more ego investment in both college attendance and intellectualism. Yet, with respect to the former attribute, they are less conforming or responsive to the school climate than the whites, while for the latter attribute they are more conforming. Obviously, the degree of ego involvement cannot be the sole determinant of responsiveness. In this connection, two incisive points by Jahoda (1959) should be emphasized. First, conformity-independence with respect to any social-psychological phenomenon is a complex multidimensional criterion, and the various dimensions need to be taken into account in research in this area. Secondly, it does not make sense to speak of independent or conforming persons, only of persons' independent actions or views. That is, actions or attitudes of individuals should be considered as the unit of study, not individuals. Both of her points have been taken into account in attempting to explain Negro-white differences with respect to climate effects on college plans and intellectual values. One final point should be noted with respect to Hypothesis II (b): The data are totally inconsistent with Frazier's contention (1962) that Negro academic ambition is founded in goals of middle-class respectability and not in the goals of learning for its own sake. Even though there appears to be some inflation of Negroes' intellectual values (as will be shown in a later chapter), this inflation is not great enough to account for the inconsistency between the present data and Frazier's argument. One possible explanation for the disparity is that the Negro students attending white high schools are not representative of the Negro middle-class students in segregated institutional settings whom Frazier was describing.

In Hypothesis III it is predicted that whites experience stronger climate effects upon their academic achievement than do Negroes:

Hypothesis III: The relationship between the climate dimensions and math achievement is less pronounced among Negroes than among whites.

As demonstrated by the data of Table X-7, the differential climate effects for the two groups are similar to those on college plans. They are substantively significant in that for all five dimensions whites experience slightly stronger effects. Thus the findings are consistent with the hypothesis, but the authors are guilty of "high treason: to be right for the wrong reason." (Jahoda, 1959, p. 100)[14]

In the recent national survey, (Coleman, et al., 1966, Chapt. 3), it was shown that minority-group achievement depends more on the school attended (i.e., whether the school environment is supportive of academic achievement) than does majority-group performance. The discrepancy in findings between the two studies can be explained partly by the diversity or heterogeneity of the national sample. The 327 Negro students in this study are a select group in comparison with Negro students in general. For example, they are more intellectually sophisticated and come from families of higher SES. Furthermore, the present sample of Negroes is comparable to the whites in terms of ability and certain indicators of family SES. Thus, many of the ability and family background differences which exist between the races in the national survey are not present here. In other words, the academic calibre of the school is more important for students when they are from deprived backgrounds. However, the background differences between the whites and Negroes here are greatly restricted because of the method of selecting the two groups.

Summary and Discussion

The 327 Negro students and 327 whites in the matched sample have been compared with the combined populations of 14,827 students in the fifteen high schools from which they were selected. The matched sample was shown to be scholastically inferior, both in terms of ability and achievement measures, to the combined school populations. They also come from family backgrounds characterized by lower SES, larger numbers of siblings, and more frequent "non-normal" family structures than the populations. It seems clear that the academic inferiority of the matched sample is primarily a function of the lower structural integrity and lower SES of their families. Solid support for this interpretation is found in the results of earlier research.

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[14] Since levels of "probability of success" and "social threat" are not controlled, it was predicted that whites would be more responsive to climate variations with respect to achievement than would Negroes. In Chapter XII, where Hypothesis IV (which predicts that controlling the effects of these two individual factors will cause the differences to disappear) is examined, it is shown that the rationale for Hypotheses III and IV is not supported by the data.

TABLE X-7

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES ON MATHEMATICS ACHIEVEMENT

	Climate Dimensions	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		Negro Respondents	White Respondents	Δ_{N-W}
I.	Absence of Academic Emulation	-.107	-.110	-.003
II.	Absence of Intell.-Estheticism	-.090	-.113	-.023
III.	Cohesive and Egalitarian Estheticism	.100	.156	-.056
IV.	Absence of Scientism	-.080	-.112	-.032
V.	Humanistic Excellence	.103	.107	-.004

Earlier research and limited indirect evidence in the present analysis suggest that the Negro students being studied here, who attend predominantly white schools, are different from Negro students attending segregated schools in that both they and their parents have a "pioneering" or "trailblazing" attitude regarding academic matters.

It has been shown that a significantly larger proportion of the Negroes in the matched sample have college plans and high scores on the intellectualsim scale. Part of this difference may be attributable to inflated aspirations (i.e., a certain lack of realism) on the part of Negro students with respect to both of these factors. It has also been found that the whites have slightly higher scores on the math test ($.10 > p > .05$). In light of the inability to match the groups on a number of family background characteristics, it is somewhat surprising the differences in achievement are not greater.

With respect to examining the first working hypothesis, the data show that just as is true for the entire school populations, each of the school climate dimensions has an effect on college plans, intellectual orientations, and math achievement in the expected direction for both racial groups.

Pulling together the results for examining the differential climate effects on the academic behavior of Negroes and whites (Hypotheses II and III), the evidence indicates that white students are slightly but consistently more responsive to climate variations than are Negroes (specifically eleven out of fifteen comparisons). This finding suggests that racial integration is not a sufficient condition for social integration of the minority group. Once admitted to the previously all-white school, the Negro may compete with his white peers in the classroom and on the athletic field. However, success in either or both of these areas does not necessarily admit the Negro to the white status system of the school or its related social activities. The racial differences in climate effects observed in the present chapter suggest that the processes of racial integration and social isolation or exclusion operate simultaneously with respect to the academic behavior of Negro students in the matched sample.

The next chapter contains an examination of outside school influences upon Negro-white differences on the dependent attributes, as well as upon racial differences in climate effects.

CHAPTER XI

OUTSIDE-SCHOOL INFLUENCES

Introduction

In the previous chapter, a preliminary examination of racial dissimilarities and of differential racial climate effects was conducted. By considering outside-school influences in the present chapter, an examination is being made of the influence of the variables on which matching was not possible. Specifically, the outside-school variables are all family-related characteristics. It is most important to assess the influence of these variables, since differences between the two groups on the dependent attributes could be a function of uncontrolled variation on familial characteristics which earlier research has shown to be related to academic behavior.

Family Size

Introducing number of siblings as a control or "test" variable (see Table XI-1) tends to slightly intensify Negro-white differences in college plans and intellectual orientations and reduces by almost one-half the differences in academic achievement.[1] Furthermore, number of sibs specifies the original relationships between race and each of the attributes in the following manner: Among students with few sibs the differences between whites and Negroes are more pronounced with respect to college plans, and the differences in achievement level almost totally disappear. Thus, when Negroes come from small families (of a size fairly typical of whites in the larger society), their educational plans and intellectual orientations are higher than whites of comparable ability, and their achievement level equals that of whites.

As family size increases, the proportion "high" on each of the dependent attributes is decreased, without exception, for both races. This finding is consistent with Nisbet's proposition (1961) that number of sibs affects the family environment (by which he means the contact between adult and child) which, in turn, affects the child's academic achievement. Nisbet's thesis is that being a member of a large family results in the child's having fewer contacts with adults and, therefore, less opportunity to learn adult speech and thought patterns which are essential for high achievement.

Given the finding that number of sibs intensifies the effects of race upon college plans and intellectual orientations and reduces its effects on achievement, what influence does number of sibs have upon the differential racial climate effects originally shown in Tables X-5, X-6, and X-7? As shown in Table XI-2, climate effects on educational plans with number of sibs controlled are not appreciably changed. The direction of effects for both races remains unchanged. Each of the five effects for Negroes is slightly reduced, while for whites they

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[1] See Table X-2 for the zero-order effects of race on the dependent attributes.

TABLE XI-1

EFFECTS OF RACE AND NUMBER OF SIBLINGS ON THE DEPENDENT ATTRIBUTES

Dependent Variable	Number of Siblings	Negro Respondents	White Respondents	Effect Measures[a]	
				Race[b]	Number of Siblings
Percentage planning to go to college	0 - 2	52.2% (138)	34.8% (210)	$a_i' = .134$ $(.001 > p)$	$a_i' = -.152$ $(.001 > p)$
	3 - 9	32.8% (189)	23.9% (117)		
Percentage high on Personal Orientation Toward Intellectualism scale	0 - 2	59.4% (138)	42.4% (210)	$a_i' = .189$ $(.001 > p)$	$a_i' = -.027$ $(.30 > p \geq .20)$
	3 - 9	58.7% (189)	37.6% (117)		
Percentage with high Mathematics test C-scores	0 - 2	62.3% (138)	62.9% (210)	$a_i' = -.034$ $(.20 > p \geq .10)$	$a_i' = -.122$ $(.01 > p \geq .001)$
	3 - 9	47.1% (189)	53.8% (117)		

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent variable and negative when whites are higher.

TABLE XI-2

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH NUMBER OF SIBLINGS CONTROLLED, ON COLLEGE PLANS

Climate Dimensions	Control Variables[a] (a_{iN}') (a_{iW}')	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Number of Siblings (-.178) (-.104)	-.117	-.222	-.105
II. Absence of Intell.-Estheticism	Number of Siblings (-.181) (-.101)	-.121	-.184	-.063
III. Cohesive and Egalitarian Estheticism	Number of Siblings (-.158) (-.084)	.170	.279	-.109
IV. Absence of Scientism	Number of Siblings (-.180) (-.100)	-.124	-.175	-.051
V. Humanistic Excellence	Number of Siblings (-.178) (-.104)	.120	.215	-.095

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

are basically unaffected. Because the climate effects on Negro plans are reduced, there is a tendency, on all five factors, for the climate differences to be slightly intensified. For Negroes, number of sibs is more highly associated with college plans than are four of the five factors. The obverse is true for whites: In each instance, the climate dimension is more strongly related to college plans than is number of sibs. These results are one more indication of the important influence of family structure on the academic behavior of Negroes.

Controlling number of sibs does not disturb the relationships between climate dimensions and intellectual orientations (See Table XI-3). The effects for both groups remain in the direction predicted by the content of the factor. Furthermore, the original differences shown in Table X-6 are almost identical in magnitude with those of Table XI-3. It should be noted that number of sibs does not make an important contribution to variation in intellectual orientations of either race with the climate dimensions controlled. In fact, the effects for Negroes approach zero.

Turning to climate effects on math performance (Table XI-4) with number of sibs held constant, the relationships are of approximately the same magnitude and in identical directions as the zero-order climate effects in Table X-7. With respect to all five factors, controlling family size tends to reduce the climate effects on Negro achievement more than effects on whites. Thus, everywhere there is a very slight intensification of the original racial differences. The contribution of family size with climate controlled is greater for Negroes than for whites. The same point held true for variation in college plans (See Table XI-2).

Closely related to number of siblings is birth order. Although the two groups could not be matched on birth order, it was felt that this characteristic--because it is a function of family size--would be adequately controlled by holding constant number of sibs. However, previous research points so strongly to the importance of birth order[2] (the scholastic superiority of first-born and only children) that the variable is introduced here. As Table XI-5 shows, birth order has essentially the same type of effects as number of siblings but less impact. The original effects of race on educational plans and intellectual orientations (See Table X-2) are only minutely intensified, and its effects on achievement are very slightly reduced. Thus, it appears that the original decision to discard birth order in favor of number of siblings was justified.

To summarize the effects of family size: The variable exerts some influence on social differences, but no more than a trivial influence upon differential racial climate effects. Specifically, controlling number of sibs intensifies the effects of race on educational plans and intellectual orientations, while it diminishes the effects of race on achievement. In contrast, the Negro-white climate differences with number of sibs controlled are essentially the same as the zero-order differential racial climate effects upon the three dependent attributes. With respect to family size, it appears that outside-school influences modify academic behavior but do little to the effects of school climate on such behavior.

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[2] See, for example, Bernstein (1961), Elder (1965), Weitz and Wildinson (1957), and Schacter (1963).

TABLE XI-3

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH NUMBER OF SIBLINGS CONTROLLED, ON INTELLECTUAL ORIENTATIONS

Climate Dimensions	Control Variables[a] (a_{iN}') (a_{iW}')	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		Negro Respondents	White Respondents	$\triangle$ N-W
I. Absence of Academic Emulation	Number of Siblings (.005) (-.056)	-.080	-.030	.050
II. Absence of Intell.-Estheticism	Number of Siblings (.004) (-.053)	-.093	-.043	.050
III. Cohesive and Egalitarian Estheticism	Number of Siblings (.017) (-.042)	.084	.140	-.056
IV. Absence of Scientism	Number of Siblings (.005) (-.050)	-.101	-.080	.021
V. Humanistic Excellence	Number of Siblings (.006) (-.055)	.077	.025	.052

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XI-4

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH NUMBER OF SIBLINGS CONTROLLED, ON MATHEMATICS ACHIEVEMENT

Climate Dimensions	Control Variables[a] (a_{iN}') (a_{iW}')	Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Number of Siblings (-.144) (-.093)	-.096	-.114	-.018
II. Absence of Intell.-Estheticism	Number of Siblings (-.145) (-.091)	-.072	-.110	-.038
III. Cohesive and Egalitarian Estheticism	Number of Siblings (-.138) (-.080)	.080	.153	-.073
IV. Absence of Scientism	Number of Siblings (-.144) (-.091)	-.062	-.107	-.045
V. Humanistic Excellence	Number of Siblings (-.144) (-.092)	.092	.110	-.018

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XI-5

EFFECTS OF RACE AND BIRTH ORDER ON THE DEPENDENT ATTRIBUTES

Dependent Variable	Birth Order[c]	Negro Respondents	White Respondents	Effect Measures[a]	
				Race[b]	Birth Order
Percentage planning to go to college	Later	34.2% (190)	30.3% (178)	$a_i' = .104$	$a_i' = .086$
	First	50.4% (137)	31.5% (149)	$(.01 > p > .001)$	$(.02 > p > .01)$
Percentage high on Personal Orientation Toward Intellectualism scale	Later	59.5% (190)	37.6% (178)	$a_i' = .185$	$a_i' = .028$
	First	58.4% (137)	44.3% (149)	$(.001 > p)$	$(.30 > p > .20)$
Percentage with high Mathematics test C-scores	Later	47.4% (190)	53.9% (178)	$a_i' = -.056$	$a_i' = .136$
	First	62.0% (137)	66.4% (149)	$(.10 > p > .05)$	$(.001 > p)$

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent variable and negative when whites are higher.

[c] Students classified as "Later" responded either, "the youngest child in your family," or, "between the youngest and the oldest;" students classified as "First" responded either, "an only child," or "the oldest child in your family," to Question 116.

Family Normality

While the family background characteristics which were combined into the familial normality index are important in their own right in that they contribute to the prediction of scholastic behavior (Bell and Vogel, 1960), they are of especial importance, theoretically speaking, to an analysis of Negro-white differences because of the traditionally unstable structure of the Negro family. In the matched sample, for instance, 61.5 percent of the Negroes and only 41.0 percent of the whites come from non-normal families.

The racial differences on the dependent attributes with familial normality held constant are shown in Table XI-6. The zero-order racial differences on educational plans are unaffected and those on intellectual orientations and mathematics achievement are slightly decreased. However, the pattern of relationships is not systematic. For both groups, normality increases achievement but decreases intellectual orientations; and normality decreases Negro college plans while it increases those of whites. The relationships support a point intimated earlier, i.e., Negro college plans and intellectual values are somewhat inflated, and the same holds true for the intellectual values of whites. For the present, attention is merely drawn to these anomalies. More careful consideration is given to them below.

When normality is introduced as a test variable between climate and educational plans (Table XI-7), little change from earlier results is obtained. The effects for each racial group and the differential racial effects are consistent with the original differences of Table X-5. There is some tendency for the magnitude of the effects to fluctuate, but this does not follow any systematic pattern. Normality, with climate controlled, contributes more to the prediction of white than of Negro college plans. In fact, the effects for Negroes are everywhere negative. This finding is consistent with the zero-order effects of normality on educational plans of Negroes as contrasted with whites (See Table XI-6). A larger percentage of Negro students from families lacking structural integrity have college plans than those from normal families. Their educational plans which are clearly inflated (and thus are "aspirational" as well as "intentional") seem to function as a compensatory mechanism for the social deprivation reflected in their family background.

As shown in Table XI-8, controlling familial normality has little impact on the differential racial climate effects on intellectual orientations. For both groups, climate effects remain in the predicted direction. Also, for both racial groups, normality has negative effects on intellectualism; and it is systematically the case that the effects of normality on Negro intellectual values are more strongly negative than those for whites.

With the influence of familial normality removed, climate effects on math achievement remain roughly the same (See Table XI-9). All racial and differential racial effects are consistent with the results shown in Table X-7. Negroes experience considerably stronger familial normality effects on their achievement than do whites. Also, as was true for number of siblings, familial normality has more impact on the achievement of Negroes than the various aspects of school environment, while the opposite is true for whites. This point again demonstrates the heightened effects of family deprivation on the achievement level of Negroes.

TABLE XI-6

EFFECTS OF RACE AND FAMILIAL NORMALITY ON THE DEPENDENT ATTRIBUTES

				Effect Measures[a]	
Dependent Variable	Familial Normality	Negro Respondents	White Respondents	Race[b]	Familial Normality
Percentage planning to go to college	Non-normal	43.3% (201)	23.9% (134)	$a_i' = .107$	$a_i' = .030$
	Normal	37.3% (126)	35.8% (193)	$(.01 > p > .001)$	$(.30 > p > .20)$
Percentage high on Personal Orientation Toward Intellectualism scale	Non-Normal	63.2% (201)	44.8% (134)	$a_i' = .165$	$a_i' = -.089$
	Normal	52.4% (126)	37.8% (193)	$(.001 > p)$	$(.02 > p > .01)$
Percentage with high Mathematics test C-scores	Non-Normal	49.8% (201)	56.7% (134)	$a_i' = -.046$	$a_i' = .073$
	Normal	59.5% (126)	61.7% (193)	$(.20 > p > .10)$	$(.04 > p > .03)$

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent variable and negative when whites are higher.

TABLE XI-7

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH FAMILIAL NORMALITY CONTROLLED, ON COLLEGE PLANS

	Climate Dimensions	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I.	Absence of Academic Emulation	Familial Normality (-.054)	(.082)	-.119	-.230	-.111
II.	Absence of Intell.-Estheticism	Familial Normality (-.055)	(.081)	-.139	-.165	-.026
III.	Cohesive and Egalitarian Estheticism	Familial Normality (-.028)	(.108)	.179	.303	-.124
IV.	Absence of Scientism	Familial Normality (-.055)	(.085)	-.143	-.158	-.015
V.	Humanistic Excellence	Familial Normality (-.054)	(.080)	.122	.226	-.104

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XI-8

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH FAMILIAL NORMALITY CONTROLLED, ON INTELLECTUAL ORIENTATIONS

Climate Dimensions	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
	(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Familial Normality (-.103)	(-.059)	-.071	-.040	.031
II. Absence of Intell.-Estheticism	Familial Normality (-.103)	(-.059)	-.102	-.045	.057
III. Cohesive and Egalitarian Estheticism	Familial Normality (-.089)	(-.049)	.067	.147	-.080
IV. Absence of Scientism	Familial Normality (-.099)	(-.060)	-.105	-.084	.021
V. Humanistic Excellence	Familial Normality (-.103)	(-.060)	.067	.037	.030

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XI-9

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH FAMILIAL NORMALITY CONTROLLED, ON MATHEMATICS ACHIEVEMENT

	Climate Dimensions	Control Variables[a] (a_{iN}')	(a_{iW}')	Weighted Factor Climate Effect Measures Standardized to a Dichotomy: Negro Respondents	White Respondents	$\triangle_{N-W}$
I.	Absence of Academic Emulation	Familial Normality (.104)	(.047)	-.087	-.104	-.017
II.	Absence of Intell.-Estheticism	Familial Normality (.105)	(.048)	-.089	-.100	-.011
III.	Cohesive and Egalitarian Estheticism	Familial Normality (.120)	(.063)	.093	.165	-.072
IV.	Absence of Scientism	Familial Normality (.105)	(.049)	-.085	-.086	-.001
V.	Humanistic Excellence	Familial Normality (.105)	(.047)	.081	.102	-.021

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

Socioeconomic Status

Before summarizing the influence of the variables for which matching proved unsuccessful, one additional factor deserves consideration. Matching on SES was accomplished using father's education as the primary measure. However, it was shown that the two groups are not comparable on father's occupation or income. The disparities were explained as functions of discrimination against Negroes in the occupational market. Since discrimination creates a lower standard of living for the Negro families, it is important to attempt an assessment of the effects of this on racial differences on the three dependent attributes. The relevant data are given in Table XI-10.[3] Holding constant father's occupation has no appreciable influence on the zero-order effects of race on the three attributes. However, father's occupation has effects in the expected direction on the dependent attributes with race controlled.[4] Finally, it is especially noteworthy that among students from white-collar backgrounds, the achievement level of Negroes slightly exceeds that of whites.

Table XI-11, to be discussed in detail momentarily, presents the racial differences on the three attributes with the two family structural variables simultaneously controlled. A comparison of the effects of these characteristics with those of father's occupation reveals that the two combined account for more variation than does father's occupation. Thus it appears that standard of living, or style of life, is indirectly yet adequately controlled by the structural integrity of the family.

Controlling simultaneously number of sibs and family normality permits an estimate of the racial effects upon the dependent attributes if matching on these two background characteristics had been possible (see Table XI-11). The effects of race on college plans are again intensified while its influence on intellectual orientations is slightly reduced. The racial effects on both attributes are statistically significant. However, the most important finding in the table is that controlling for the two background characteristics simultaneously reduces the racial differences on mathematics achievement from -.061 to -.017--a substantively as well as statistically insignificant difference.

The next logical step would be to continue from racial effects to differential racial climate effects. However, simultaneously controlling number of sibs and familial normality in an examination of climate effects upon the three attributes adds nothing to the results already presented. For this reason, no tabular presentation of these results is made.[5]

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[3] One could argue that family income would be a more appropriate test variable here. However, as noted earlier, a large number of students could not make a valid assessment of the annual income of their households.

[4] This also holds true, with one minor exception, within both racial groups. Among whites, the percentage with high math scores decreases slightly between the blue-collar and white-collar categories. All other within-race comparisons are in the expected direction.

[5] Because of the limited sample size, it was necessary to dichotomize the climate dimensions in order to introduce simultaneously number of sibs and familial normality.

TABLE XI-10

EFFECTS OF RACE AND FATHER'S OCCUPATION ON THE DEPENDENT ATTRIBUTES

Dependent Variable	Father's Occupation[c]	Negro Respondents	White Respondents	Effect Measures[a]: Race[b]	Effect Measures[a]: Father's Occupation
Percentage planning to go to college	Blue-Collar	38.1% (223)	21.6% (190)	$a_i' = .117$	$a_i' = .160$
	White-Collar	47.1% (104)	43.8% (137)	$(.001 > p)$	$(.001 > p)$
Percentage high on Personal Orientation Toward Intellectualism scale	Blue-Collar	56.5% (223)	37.4% (190)	$a_i' = .191$	$a_i' = .079$
	White-Collar	64.4% (104)	45.3% (137)	$(.001 > p)$	$(.03 > p > .02)$
Percentage with high Mathematics test C-scores	Blue-Collar	49.8% (223)	60.5% (190)	$a_i' = -.057$	$a_i' = .044$
	White-Collar	61.5% (104)	58.4% (137)	$(.01 > p > .05)$	$(.20 > p > .10)$

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent variable and negative when whites are higher.

[c] Blue-collar occupations include unskilled, semi-skilled, and skilled; white-collar occupations include clerical or sales, proprietor, managers or officials, technical, professional, and scientific.

TABLE XI-11

EFFECTS OF RACE, NUMBER OF SIBLINGS, AND FAMILIAL NORMALITY ON THE DEPENDENT ATTRIBUTES

Dependent Variable	Independent Variables		Negro	White	Effect Measures[a]		
	Number of Siblings	Familial Normality	Respondents	Respondents	Race[b]	Number of Siblings	Familial Normality
Percentage planning to go to college	0 - 2	Non-normal	54.6% (97)	29.5% (88)	$a_i' = .142$	$a_i' = -.151$	$a_i' = .047$
		Normal	46.3% (41)	38.5% (122)			
	3 - 9	Non-normal	32.7% (104)	13.0% (46)	$(.001 > p)$	$(.001 > p)$	$(.20 > p > .10)$
		Normal	32.9% (85)	31.0% (71)			
Percentage high on Personal Orientation Toward Intellectualism scale	0 - 2	Non-normal	64.9% (97)	46.6% (88)	$a_i' = .169$	$a_i' = -.018$	$a_i' = -.089$
		Normal	46.3% (41)	39.3% (122)			
	3 - 9	Non-normal	61.5% (104)	41.3% (46)	$(.001 > p)$	$(.40 > p > .30)$	$(.02 > p > .01)$
		Normal	55.3% (85)	35.2% (71)			
Percentage with high Mathematics test C-scores	0 - 2	Non-normal	60.8% (97)	58.0% (88)	$a_i' = -.017$	$a_i' = -.132$	$a_i' = .087$
		Normal	65.9% (41)	66.4% (122)			
	3 - 9	Non-normal	39.4% (104)	54.3% (46)	$(.40 > p > .30)$	$(.001 > p)$	$(.02 > p > .01)$
		Normal	56.5% (85)	53.5% (71)			

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent variable and negative when whites are higher.

Thus far, the analysis of familial effects has concentrated upon variables which are "accidents of birth." Parental attitudes on differential racial climate effects will be considered before closing this section of the analysis.

How do parental attitudes modify the school climate effects upon academic behavior? The only available data relating to this question are for college plans. Parental attitudes are measured by responses to the following items (Q's 271-272): "How does each of your parents feel about your decision with respect to college?" Comparable questions concerning parental attitudes toward intellectual orientations and academic achievement were not included in the questionnaire.[6] Thus, it is necessary to limit the present discussion to a consideration of college plans.

In Table XI-12, paternal encouragement is introduced as a test variable in the relationship between climate and college plans for Negroes and whites. In every instance the climate effects are reduced for both groups. Nevertheless, whites remain more sensitive to climate than Negroes. The effects of paternal encouragement are much stronger for both racial groups than are the climate dimensions. Finally, and of particular importance, the influence of paternal encouragement is greater for whites than for Negroes.

The corresponding tabulations for maternal encouragement are presented in Table XI-13. The reduction of climate effects among whites is sufficiently greater than that among Negroes to result in Negroes having a very slight tendency to experience stronger climate effects for Factors II, III, and IV. Finally, it may be observed that maternal encouragement has a greater independent effect on the college plans of whites than on those of Negroes.

Summary and Conclusions

What are the effects of the familial variables on the preliminary relationships obtained in the preceding chapter? And what conclusions can be drawn from these findings?

The control of family background characteristics has the following influences upon the racial (i.e., non-climate) differences in academic behavior. The difference in college plans favors Negroes even more than the zero-order effects presented in Table X-2; the difference in intellectual orientations favors Negroes to roughly the same degree as that observed at the zero-order level; and the control of family structural variables reduces the racial differences in achievement to a point of substantive insignificance.

Secondly, the control of family background characteristics has only a negligible influence on the original differential racial climate effects on the three attributes. However, the effects of various family background characteristics, with the climate dimensions controlled, are generally greater for Negroes than for whites.

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[6] Particularly with respect to intellectual orientations, it would have been difficult to construct an appropriate item in the student questionnaire.

TABLE XI-12

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH PATERNAL ENCOURAGEMENT CONTROLLED, ON COLLEGE PLANS

	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
Climate Dimensions	(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Paternal Encouragement (.306)	(.463)	-.092	-.160	-.068
II. Absence of Intell.-Estheticism	Paternal Encouragement (.307)	(.465)	-.091	-.132	-.041
III. Cohesive and Egalitarian Estheticism	Paternal Encouragement (.295)	(.446)	.155	.201	-.046
IV. Absence of Scientism	Paternal Encouragement (.306)	(.466)	-.102	-.127	-.025
V. Humanistic Excellence	Paternal Encouragement (.0305)	(.464)	.096	.156	-.060

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XI-13

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH MATERNAL ENCOURAGEMENT CONTROLLED, ON COLLEGE PLANS

	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
Climate Dimensions	(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	Δ_{N-W}
I. Absence of Academic Emulation	Maternal Encouragement (.344)	(.474)	-.106	-.144	-.038
II. Absence of Intell.-Estheticism	Maternal Encouragement (.345)	(.476)	-.105	-.100	.005
III. Cohesive and Egalitarian Estheticism	Maternal Encouragement (.337)	(.455)	.172	.164	.008
IV. Absence of Scientism	Maternal Encouragement (.345)	(.479)	-.119	-.083	.036
V. Humanistic Excellence	Maternal Encouragement (.343)	(.475)	.110	.139	-.029

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

Thirdly, the control of either paternal or maternal encouragement toward college (as perceived by the respondent) produces a greater reduction in white than in Negro climate effects, resulting in a reduction in the original differential racial climate effects on college plans. Also, with the various climate dimensions controlled, parental encouragement has more impact on the college plans of whites than on those of Negroes.

What implications of substantive relevance can be drawn from the above results? Attention here is focussed on two implications.

First, the familial resources of the Negro students are appreciably lower than those of the white populations of the schools. The point being stressed is so obvious that it might easily be overlooked altogether; yet, "obvious" does not mean "unimportant." Given 14,500 white students from among which to choose, it was not possible to find adequate matches for the 327 Negro students with respect to all personal and family background variables considered. It was not possible to match on familial characteristics once matching had been accomplished on other variables. If priority had been given to family structural characteristics, then matching could not have been accomplished on either I.Q. or father's education. The lack of structural integrity of the Negro family is of considerable significance here. The matriarchal family form, which has its roots in the era of slavery, is still widespread today. The difficulty of the Negro male in securing employment and the ease of the Negro female in obtaining at least domestic work combine to perpetuate this family form. In addition to a substantial body of existing literature, the findings of this research highlight the implications of family structure for the academic achievement of Negroes: The discrepancy in achievement level between the two groups (favoring whites) disappears when family structural variables are controlled.

Differential access to socio-economic resources is also evident in the data. For instance, it was observed that when the two cohorts were successfully matched on father's education, discrimination was reflected in lower occupational levels and income for the Negroes. The combination of these factors results in lower standards of living, less opportunity of progeny to learn adult behavior patterns, and other such background deficiencies among Negroes. Therefore, the familial resources which are important to academic success are more limited for the Negro students.

The admission of Negroes to predominantly white, high quality high schools should imply equal opportunity to learn. However, equality of educational opportunity does not actually exist for these students, for the Negro student is unable to bring the same resources to the classroom as does his white counterpart. In what should be--at least academically--an ideal situation, a fundamental inequality exists because of the disproportionate background resources for learning, competing, and achieving.

It is beyond the scope of this research to suggest solutions to this critical problem; yet, one wonders how long it will take to effect equality of educational opportunity.[7]

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[7] Even the research staff of the recent national survey of education opportunity (Coleman, et al., 1966) avoided suggesting solutions to racial problems in education.

The second implication of the findings of this chapter is that the most important variable is color of skin. In the context of family or outside-school influences, none of the variables seems to account for the academic behavior of Negro adolescents as well as their racial identification. Regardless of what variable is controlled, there is a strong tendency for the original racial differences in the effects of climate on the three dependent attributes to persist; the Negro aspires to a college education simply because he is a Negro. What is being observed here could perhaps be more appropriately viewed as a "community" influence. The term, as used in the present context, refers to the totality of Negroes in the U.S. rather than to the local area in which the adolescent lives. The experiences of 18,860,000 Negroes (1960 census) in the U.S. have been communicated to the youth of this minority group and internalized by them so completely that not even parental influences on educational aspirations are as strong, relative to whites, as one would expect them to be. As a result, it is generally observed that the Negroes are not influenced as much by school environment or parental encouragement as are whites. This is interpreted to mean that the community influence--as specified above--on academic behavior is not vitiated by other experiences. Thus, race is a variable whose effects on educational aspirations and intellectual orientations persist regardless of in-school or outside-school influences.

No findings to be presented in the remainder of the analysis contradict these two conclusions; therefore, it is felt they are highly tenable.

In the next chapter, where individual influences are introduced as controls, working Hypothesis IV is examined.

CHAPTER XII

INDIVIDUAL INFLUENCES

Introduction

In this chapter, attention is focussed on the influence of three individual[1] (or social-psychological) variables on racial effects and differential racial climate effects. Two of these variables are employed as indicators of the concepts "probability of success" and "social threat," which in Chapters II and VIII were posited as having important consequences for any differences in climate effects on the achievement level of Negroes and whites. That is, based on earlier research, it was predicted in Hypothesis III that the effects of discrimination on Negro students would have adverse psychological consequences (two of which are their perception of their "probability of success''and their feeling "social threat" resulting from association and competition with whites) for their achievement level, leading to a lower achievement responsiveness on their part to variation in school climates than is the case for whites. It was further predicted that when the effects of these psychological mechanisms are controlled, the differential achievement response of Negroes and whites to school climate would be affected:

Hypothesis IV:	When levels of probability of success and social threat are statistically controlled, the differential achievement response of Negroes and whites to the climate dimensions should diminish or tend to disappear.

In Chapter X it was shown that the data support Hypothesis III; however, it was contended the data support the hypothesis for the wrong reason. (See Footnote 14 of Chapter X.) That is, the rationale for Hypotheses III and IV appears to be faulty. One of the objectives of this chapter will be to examine the data for Hypothesis IV and then to elaborate upon the "faulty reasoning" underlying the predictions in these two working propositions.

Measurement of Probability of Success and Social Threat

These two interrelated social-psychological mechanisms are highly complex phenomena (Katz, 1964) which are certainly difficult to operationalize in experimental research to say nothing of the operationalization problems encountered in clinical research. The problem would appear to be even more difficult in survey research. Nevertheless, there are items available in the student questionnaire which can serve as indicators of various aspects of these two concepts as they are broadly defined by Katz (1964). For example, in discussing probability of success, Katz (1964, p. 383) reasons that if a new student perceives the standards of excellence in a white high school as being higher than those he has previously experienced, he may develop low self-esteem which, in turn, will lower his achievement motivation. Thus, the measure of academic self-esteem described in Chapter IX is an appropriate indicator of probability of success.

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[1] Such individual attributes as sex, year in school, I.Q., and father's education are not introduced here because the two racial groups were matched on these characteristics. Consequently, they could have no meaningful effect on zero-order racial effects or on differential racial climate effects. Any differences with these variables controlled would be attributable solely to the lack of a perfect match on them. (Tabulations were, in fact, made and examined to verify the logic of this argument. Controlling for the matching variables did not influence the racial differences on the dependent attributes or the differences in climate effects for Negroes and whites.)

A second indicator of probability of success is sense of control of destiny. While the concept is not new to sociological and psychological research, it has, until recently, rarely been used in educational research on racial differences in academic behavior. Coleman, *et al*. (1966, p. 288) succinctly define the term in this context:

> "If a child feels that his environment is capricious, or random, or beyond his ability to alter, then he may conclude that attempts to affect it are not worthwhile and stop trying. Such a response to one's environment may be quite unconscious, but merely a general attitude that has developed through long experience. The particular relevance of this factor for groups that have been the subject of discrimination is that they have objectively had much less control of their environment than have members of majority groups. This has been particularly true for Negroes."

In discussing social threat, Katz (1964) refers to it as a class of social stimulus events which tend to evoke anxious expectations that others will inflict harm or pain. He argues that such a threat should be partly a function of the amount of white hostility on the part of students and/or teachers toward Negro students. Rejection by teachers and/or students should result in emotional responses such as low self-esteem that are adverse to his intellectual functioning and performance. Thus, self-esteem also serves as an indicator of level of social threat. The same argument holds for control of destiny: If Negro students are rejected by the predominantly white environment this should lead to feelings of despair and inefficacy.

Even though Hypothesis IV deals only with math achievement as a dependent attribute, the effects of the individual characteristics on the other two dependent attributes will be examined in the results presented below.

Effects of Self-Esteem

As noted at several points in this report, prior research has tended to show that the self-esteem of Negroes is lower than that of whites. However, the recent national study by Coleman, *et al*. (1966, p. 281) revealed no differences between Negroes and whites with respect to academic self-esteem. They conjecture that this lack of difference could be attributable to a lack of validity in the responses of Negro students to "paper and pencil" measures of the concept. This is not to suggest a purposeful distortion by Negro students of such items. Instead, it may be an unconscious inflation on their part as a defense mechanism against the experiences of discrimination (Blake, 1960). The results of the present study go even beyond those of the Coleman report. The level of self-esteem of the sample of Negro students is higher than that of the matched sample of whites and of the total combined populations of the fifteen schools in which they were enrolled. Using the classification scheme employed in Table IX-19, the percentages in the various groups with high academic self-esteem are as follows: 68.8 (N = 14,827) in the fifteen schools; 80.4 percent in the Negro sample; and 62.1 percent in the white sample. The fact that the Negro students have appreciably higher academic self-esteem than the total populations of the schools even though the former have both lower aptitude and achievement levels (see Table X-1), strongly suggests a certain degree of inflated esteem on their part. However, a combination of other factors could explain part of the discrepancy, especially that between the Negroes and their matched white counterparts. First, the civil rights movement, with its impetus toward desegregation, may well have increased the academic self-image of these students.[2] Secondly, and closely related to this, is the strong possibility of a "selection" effect (Maxwell, 1961, p. 29) operating. That is, these Negro students are atypical in that they are attending predominantly white, middle-class high schools, and one of the important variables in motivating them to attend such schools may be their high-esteem. There is no way to test the validity of this combination of factors dealing with the Negroes' high level of esteem. Regardless of the explanation, it is important to introduce academic self-esteem as a test variable given the demonstration of its importance in previous research. Before presenting such data, however, it should be emphasized that the higher self-esteem of the Negro students contradicts the rationale for Hypothesis III which was examined in Chapter X. Although the data presented there are consistent with the prediction (i.e., that climate effects on the achievement of whites would be greater than on Negroes) the argument that this is attributable to lower self-esteem on the part of Negroes is completely contradicted by the above data.

Table XII-1 gives the independent effects of race and self-esteem on the three dependent attributes. Both variables exert statistically significant effects on educational plans. The zero-order racial difference on the attribute has been reduced from .101 (see Table X-2) to .076. This decrease is accounted for by the relationship being less pronounced among students having high esteem. Furthermore, esteem accounts for a greater proportion of variation in the college plans of whites than of Negroes (.159 vs. .102). These results again suggest that the college plans and self-esteem of whites are somewhat less inflated than those of Negroes.

Self-esteem has a strong positive effect on intellectual orientations, with the magnitude being roughly comparable for the two racial groups. Nevertheless, the original racial difference (with a larger proportion of Negroes having high intellectual scores) is not greatly affected by controlling self-esteem.

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[2] This explanation is consistent with a point emphasized by Pettigrew (1964, p. 128) which was cited in Chapter II: Desegregation in a community gives academic encouragement to Negroes (whether in segregated or desegregated schools).

TABLE XII-1

EFFECTS OF RACE AND SELF-ESTEEM ON THE DEPENDENT ATTRIBUTES

				Effect Measures[a]	
Dependent Attributes	Self-esteem	Negro Respondents	White Respondents	Race[b]	Self-esteem
Percentage planning to go to college	Low	32.8% (64)	21.0% (124)	$a_i' = .076$	$a_i' = .136$
	High	43.0% (263)	36.9% (203)	$(.03 > p > .02)$	$(.001 > p)$
Percentage high on Personal Orientation Toward Intellectualism scale	Low	40.6% (64)	26.6% (124)	$a_i' = .142$	$a_i' = .227$
	High	63.5% (263)	49.3% (203)	$(.001 > p)$	$(.001 > p)$
Percentage with high Mathematics test S-scores	Low	40.6% (64)	50.8% (124)	$a_i' = -.089$	$a_i' = .149$
	High	56.6% (263)	65.0% (203)	$(.02 > p > .01)$	$(.001 > p)$

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent attribute and negative when whites are higher.

Finally, Table XII-1 shows a positive effect of self-esteem on the achievement level of both racial groups, with its impact being roughly comparable for each. Self-esteem fails to specify the original relationship between race and achievement. That is, within the two categories of esteem the racial discrepancies in achievement are not appreciably different.

The zero-order effects of race on achievement are actually slightly intensified with the effects of esteem controlled. This finding clearly contradicts the rationale for Hypothesis III that the lower achievement of Negroes is partly attributable to lower probability of success and social threat.

Table XII-2 presents the differential social climate effects on college plans with self-esteem controlled. Self-esteem has no influence on the original effects shown in Table X-5. On the other hand, the predictive power of self-esteem is independent of school climate, with its effects considerably stronger on whites' college plans than on those of Negroes.

The control of self-esteem (see Table XII-3) does not have any systematic impact on the original differential climate effects on intellectualism presented in Table X-6. Furthermore, the predictive power of self-esteem is independent of effects of the various climate dimensions and very similar for Negro and white students.

The results of Table XII-4, which provide data for examining working Hypothesis IV, show that controlling self-esteem does nothing to the original relationship between climate dimensions and achievement presented in Table X-7. Furthermore, the effects of esteem on achievement for each racial group are, for the most part, independent of the climate dimensions. Thus, the results of Table XII-4 provide no support whatsoever for Hypothesis IV.

In summary, the results of Tables XII-2, XII-3, and XII-4 clearly indicate that self-esteem has no appreciable influence on the original differential racial climate effects on the three dependent attributes. This is not to say that self-esteem has no implications for these three aspects of academic behavior. Indeed, it has a sizable influence on the college plans, intellectual orientations, and achievement levels of both groups, and its independent effects are greater than those of the climate dimensions upon intellectual orientations and math achievement for both racial groups. In short, the influences of academic self-image and school climate are independent of each other. Thus, for the present sample of Negroes and whites, self-esteem is irrelevant with respect to the relative influence of school environment. There appear to be two sets of factors which account for its irrelevance. First, the sample used in the research is matched on a number of critical personal and background characteristics. Thus, one of the most important remaining differences (if not the most important) is racial identity. That is, every indication from the data in this research is that racial differences are essentially matters of life-circumstances or earlier life experiences unique to Negroes in American society. Secondly, being enrolled in high quality, predominantly white high schools (in conjunction with "pioneering" attitudes which are partly responsible for the Negroes' presence in these schools) provides a boost to the self-esteem, scholastic attitudes, and performance of Negroes. The result of these factors taken together is that probability of success and social threat as measured by academic self-esteem are not an explanatory variable for the racial differences.

TABLE XII-2

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH ACADEMIC SELF-ESTEEM CONTROLLED, ON COLLEGE PLANS

Climate Dimensions	Control Variables[a]			Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Self-esteem	(.093)	(.160)	-.134	-.223	-.089
II. Absence of Intell.-Estheticism	Self-esteem	(.094)	(.162)	-.126	-.175	-.049
III. Cohesive and Egalitarian Estheticism	Self-esteem	(.080)	(.151)	.198	.286	-.088
IV. Absence of Scientism	Self-esteem	(.093)	(.162)	-.138	-.166	-.028
V. Humanistic Excellence	Self-esteem	(.093)	(.161)	.137	.217	-.080

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XII-3

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH ACADEMIC SELF-ESTEEM CONTROLLED, ON INTELLECTUAL ORIENTATIONS

Climate Dimensions	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
	(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Self-esteem (.225)	(.220)	-.069	-.027	.042
II. Absence of Intell.-Estheticism	Self-esteem (.226)	(.221)	-.086	-.033	.053
III. Cohesive and Egalitarian Estheticism	Self-esteem (.221)	(.212)	.072	.137	-.065
IV. Absence of Scientism	Self-esteem (.225)	(.221)	-.093	-.067	.026
V. Humanistic Excellence	Self-esteem (.226)	(.220)	.066	.024	.042

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XII-4

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH ACADEMIC SELF-ESTEEM CONTROLLED, ON MATHEMATICS ACHIEVEMENT

Climate Dimensions	Control Variables[a] (a_{iN}')	(a_{iW}')	Weighted Factor Climate Effect Measures Standardized to a Dichotomy: Negro Respondents	White Respondents	Δ_{N-W}
I. Absence of Academic Emulation	Self-esteem (.154)	(.138)	-.102	-.110	-.008
II. Absence of Intell.-Estheticism	Self-esteem (.155)	(.139)	-.086	-.107	-.021
III. Cohesive and Egalitarian Estheticism	Self-esteem (.150)	(.131)	.090	.153	-.063
IV. Absence of Scientism	Self-esteem (.155)	(.138)	-.077	-.103	-.026
V. Humanistic Excellence	Self-esteem (.154)	(.138)	.098	.107	-.009

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

Effects of Control of Destiny

In the recent national study of equality of educational opportunity (Coleman, *et al*., 1966, p. 289), it was shown that this attitudinal factor was the one that best distinguished Negroes and other minority children from whites; minority group children showed much lower sense of control of their environment. Such a finding is highly congruent with the observation that the environment of Negroes in general--both in the home and outside the family--is unresponsive to their physical and psychological needs. More important is their finding that for Negroes this variable is the best single predictor of achievement.

Only one item in the student questionnaire, number 425, is available as a measure of control of destiny: "The best way to get ahead in life is to..." Those responding "work hard" or get a "college education" are classified as "having control;" other responses suggesting luck or special talents are placed in the "no control" category. Again the results here are inconsistent with those of earlier research: 68.8 percent of the Negroes as contrasted with 57.5 percent of the matched whites feel that they have control of their destiny. It is the belief system with respect to the environment--not the actual control--which should affect their academic behavior. It may well be the case that these Negro students view their environment relative to that of their parents; the "social *weltanschauung*" of a Negro adolescent should be considerably more optimistic than that of his parents who have lived the majority of their lives in the period prior to the civil rights revolution.

The data of Table XII-5 indicate that environmental control does not have a statistically significant effect on any of the three dependent attributes with race controlled.[3] Therefore, it does not have any noticeable impact on the original racial differences. Furthermore, it has no appreciable impact on the college plans and intellectual orientations of either Negroes or whites. Consequently, it is not necessary to introduce control of destiny as a test factor for differential racial climate effects on these two dependent attributes. However, control of destiny does have a moderate positive effect of .080 on the math achievement of Negroes (.560 - .480) and a very slight negative effect on the achievement of whites (.585 - .612 = -.027). Thus, although control of destiny does not reduce the zero-order racial differences in achievement, it does specify the original relationship: Among students who feel they have control of their environment, only a slightly smaller percentage of Negroes than of whites have high math scores (56.0 percent vs. 58.5 percent). These points make it important to introduce control of destiny into the relationship between climate and math performance for the two groups. This is done in Table XII-6, where it can be seen that the differential climate effects are not affected by holding constant control of destiny. Thus, here again the evidence fails to support Hypothesis IV just as was true when academic self-esteem was introduced as a test variable into the differential racial climate effects.

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[3] The finding that control of destiny does not reduce the racial difference in achievement is further evidence of a lack of support for the rationale of Hypothesis III.

TABLE XII-5

EFFECTS OF RACE AND CONTROL OF DESTINY ON THE DEPENDENT ATTRIBUTES

Dependent Attributes	Control of Destiny[c]	Negro Respondents	White Respondents	Effect Measures[a]: Race[b]	Effect Measures[a]: Control of Destiny
Percentage planning to go to college	No control	41.2% (102)	29.5% (139)	$a_i' = .100$	$a_i' = .012$
	Control	40.9% (225)	31.9% (188)	$(.01 > p > .001)$	$(.40 > p > .30)$
Percentage high on Personal Orientation Toward Intellectualism scale	No control	56.9% (102)	38.1% (139)	$a_i' = .179$	$a_i' = .038$
	Control	60.0% (225)	42.6% (188)	$(.001 > p)$	$(.20 > p > .10)$
Percentage with high Mathematics test C-scores	No control	48.0% (102)	61.2% (139)	$a_i' = -.064$	$a_i' = .023$
	Control	56.0% (225)	58.5% (188)	$(.10 > p > .05)$	$(.30 > p > .20)$

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent attribute and negative when whites are higher.

[c] Control of destiny is measured by Question 425: "The best way to get ahead in life is to ...;" "work hard" and "get a college education" represent control, and "have a pleasant personality and be likeable," "know the right people," "save your money," and "be a person with a special talent such as an actor, good athlete, or singer" represent no control.

TABLE XII-6

DIFFERENTIAL RACIAL EFFECTS OF FACTOR QUARTILES WITH "CONTROL OF DESTINY" CONTROLLED, ON MATHEMATICS ACHIEVEMENT

	Climate Dimensions	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
		(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I.	Absence of Academic Emulation	Control of Destiny .083	 -.032	-.095	-.098	-.003
II.	Absence of Intell.-Estheticism	Control of Destiny .085	 -.030	-.093	-.130	-.037
III.	Cohesive and Egalitarian Estheticism	Control of Destiny .082	 -.014	.089	.144	-.055
IV.	Absence of Scientism	Control of Destiny .086	 -.027	-.081	-.126	-.045
V.	Humanistic Excellence	Control of Destiny .084	 -.029	.091	.094	-.003

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[a] The a_{iN}' and a_{iW}' are weighted effect estimates of the control variables for Negroes and whites, respectively.

The zero-order, within-race effects of control of destiny shown in Table XII-5 are not systematically affected by controlling the various climate dimensions in Table XII-6: its effects on Negroes are moderate and positive, while those for whites remain small and negative. Thus, although Negro-white differences here with respect to control of environment are inconsistent with those of the recent Coleman, et al. report (1966, p. 289) in that for this matched sample the Negroes exhibit a higher control of destiny, the results of the present study are consistent with those of the Coleman report in another sense: The effects of control of destiny on achievement are stronger for Negroes than for whites. The interpretation in the Coleman report (p. 321) helps to explain this discrepancy. For children from disadvantaged[4] groups, whose environment is less responsive to their needs and desires, a feeling of despair and belief that their actions cannot affect their life chances often develops which becomes a psychological obstacle to performance. However, for those members from such disadvantaged groups who, for whatever reason, have not developed such a perspective or have managed to overcome it if they earlier possessed it, a belief in the ability to manipulate their environment provides a special impetus to achievement which in turn will provide them with an even stronger sense of control over their life chances. Thus for minority groups who have been the victims of discrimination, achievement is more closely related to their attitude toward the environment than for groups not subject to such discrimination.

One final point regarding control of destiny should be made. Given the finding that a larger percentage of the Negroes than the matched whites in white schools sense control of their environment, then the question should be posed as to whether their high scores are a function of being placed in integrated schools. For if this is the case, then its implications for school desegregation are obvious. However, it is probably the case that the causal nexus is at least partly in the opposite direction for the present sample of Negroes: They are attending predominantly white, middle-class schools partly because they have a strong belief in their ability to determine their destiny.[5]

Before closing this section on Hypothesis IV, regarding the influence of probability of success and social threat on differential climate effects on the academic performance of Negroes and whites, some comments are appropriate regarding the validity of measures of these two complex phenomena. Only two crude indicators of the concepts have been employed--a two-item construct of academic self-esteem and a single item indicator of control of destiny. There are a number of other items from the student questionnaire tapping social threat which could be introduced in the analysis; for example, numbers 27-37, 137, 140, 147, 148, 150, 151, 153, and 263. Table XII-7 gives data permitting a comparison of social threat

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[4] It should be emphasized that "disadvantaged" in this context refers to Negroes in general, not to the adolescents in this sample. Nevertheless, these 327 Negroes overall come from less advantaged backgrounds than their white counterparts. As shown in Chapter IX, the former are more likely to come from large families lacking structural integrity and having fewer material possessions.

[5] Thus, what is being suggested here is what is implied by Coleman, et al. (1966, p. 323): Control of destiny and achievement are mutually dependent.

TABLE XII-7

NEGRO-WHITE RESPONSES TO SEVERAL INDICATORS OF SOCIAL THREAT

Items[a]	Negroes	Whites
27-37. Median Number of School Activities in which Student is a Participant	1.4063	1.1198
137. Percentages Saying School has been "Dull" or "Unhappy"	12.3	17.3
140. Percentages Saying Students do not get a Square Deal from Teachers and Principal	31.0	29.4
147. Percentages not Saying Most Teachers are Friendly	39.0	33.3
148. Percentages Saying Most Teachers are Too Strict	13.5	9.2
150. Percentages not Saying Most Teachers Understand Problems of Teenagers	66.6	73.7
151. Percentages Saying Most Teachers are not Interested in Teenagers	9.5	15.6
153. Percentages not Saying Most Teachers are willing to Help Out in Activities	65.3	70.0
263. Percentages Agreeing That "There are a few students who control things in this school, and the rest of us are out in the cold."	24.4	41.9

[a] Numbers to left of items refer to identification number in student questionnaire in Appendix A.

for the two groups. Of the nine indicators, Negroes show less social threat than whites on six of them: the average number of school clubs and activities in which they participate is greater than that for whites (items 27-37); a smaller percentage of Negroes feel that their time in the school has been "dull" or "unhappy" (item 137); a smaller percentage do not feel that most teachers fail to understand problems of teenagers (item 150); a smaller percentage say that most teachers are not interested in teenagers (item 151); a smaller percentage do not believe that teachers are not willing to help out in activities (item 153); and they are less likely to agree that a few students "control things" in the school (item 263). On the other hand, the Negro students are slightly more likely to believe that students are not treated fairly by school officials (item 140), are less likely to classify most teachers as friendly (item 147), and more likely to say that most teachers are too strict (item 148). Thus, overall, the evidence suggests that the Negro students perceive less social threat, or are better adjusted, in the schools than their white counterparts. These results lend support to the adequacy of academic self-esteem and control of destiny as indicators of social threat in the present analysis.

The results presented thus far in this chapter demonstrate a lack of support for the rationale underlying Hypotheses III and IV and systematically fail to support the prediction of Hypothesis IV. The only variables which account for the small discrepancy in Negro-white performance are family structural characteristics--normality and number of siblings--variables which have been shown to have important consequences for achievement and aspirations in general, but which are even more important for a racial group which has a history of slavery and discrimination.

Effects of Intellectualism

The final individual influence considered is the individual's intellectualism score. Thus, just as was done in Chapter V of the parent research[6], respondents' intellectual values are converted from a dependent attribute to a test factor for two reasons. First, unless the climate effects persist with the corresponding individual characteristic controlled, then such effects cannot be attributed to variations in school environment (Blau, 1960). Secondly, it is important to determine if students' intellectual values have any influence on the differential racial climate effects.

Table XII-8 shows that for both racial groups intellectualism has strong effects on their college plans, with the effects on whites (.240) being somewhat stronger than for Negroes (.164). The zero-order racial difference is reduced somewhat because among students with high intellectualism scores whites are only slightly less likely to have college plans. These results suggest an inflation in the college plans of those Negroes with low intellectualism scores.

Intellectualism also has a positive effect on the math performance of both groups, with the effects being stronger for Negroes than for whites (.110 vs. .072). The zero-order racial differences are very slightly intensified, which is attributable to the greater discrepancy in performance between those students having low intellectualism scores than those with high scores.

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[6] See the section of Chapter V entitled "Effects of Climate Dimensions on College Plans and Mathematics Achievement with Intellectual Values Controlled."

TABLE XII-8

EFFECTS OF RACE AND INTELLECTUALISM ON TWO DEPENDENT ATTRIBUTES

Dependent Attributes	Personal Orientation Toward Intellectualism scale score	Negro Respondents	White Respondents	Effect Measures[a] Race[b]	Effect Measures[a] P.O.T.I. scale score
Percentage planning to go to college	Low	31.3% (134)	21.1% (194)	$a_i' = .064$	$a_i' = .201$
	High	47.7% (193)	45.1% (133)	$(.05 > p > .04)$	$(.001 > p)$
Percentage with high Mathematics test C-scores	Low	47.0% (134)	56.7% (194)	$a_i' = -.078$	$a_i' = .091$
	High	58.0% (193)	63.9% (133)	$(.03 > p > .02)$	$(.01 > p > .001)$

[a] Effect measures of dichotomous variables are weighted.

[b] The sign of a_i' is positive when Negroes are higher on the dependent attribute and negative when whites are higher.

Tables XII-9 and XII-10 give the climate effects on college plans and math, respectively, for each racial group with intellectualism controlled. The most important finding in the two tables is that for both dependent attributes there is only a negligible reduction in climate effects for either racial group. Thus, just as is the case for the parent research, the effects of various dimensions of school climate on college plans and achievement are independent of respondents' internalized academic values, meeting the most important criterion of contextual analysis.

Secondly, the data of Tables XII-9 and XII-10 show that controlling intellectual orientations has no systematic influence on the original racial differences in climate effects on college plans and achievement.

Summary

Three relevant individual (or social-psychological) variables which earlier research has shown to be relevant to the present problem were introduced into the analysis: academic self-esteem, control of destiny, and intellectualism (which was treated as a test factor rather than dependent attribute at one point in the analysis).

It was found, contrary to most earlier research, that a higher percentage of Negroes than of whites manifest high levels of academic self-esteem and control of destiny. This finding, coupled with the result that holding constant these two factors has no appreciable influence on the zero-order racial differences for any of the three dependent attributes, demonstrates that the rationale for Hypothesis III is not valid. Furthermore, holding constant these two factors has no systematic influence on the original racial differences in climate effects, and thus Hypothesis IV is not supported.

One of the most important findings of this segment of the research is that Negroes have higher self-esteem and sense of control of destiny than the matched sample of whites. This difference seems partly explicable in terms of the two groups being matched on such characteristics as ability and SES which are highly related to self-esteem and control of destiny. These are variables on which Negro and white students in the American population differ greatly. It also seems plausible to attribute part of the high self-esteem and control of destiny of Negroes to the positive effects of the civil rights movement and to a selection process; that is, Negroes having high esteem and a belief in their ability to control their environment are likely to seek admission to white, middle-class schools in order to obtain the academic skills necessary for success in American society. In turn, attending such high schools would appear to reinforce their self-esteem, scholastic attitudes, and academic performance.

Finally, it was demonstrated that introducing intellectualism as a test variable into the relationship between climate dimensions and (1) college plans and (2) math achievement does not appreciably decrease the climate effects on these two attributes for either Negro or white students. These results, which are consistent with those of the parent research, offer clear evidence that the academic environment of the school exerts an influence on students' educational plans and performance independent of their internalized academic values, thus meeting the most important criterion of contextual analysis.

TABLE XII-9

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH INTELLECTUAL ORIENTATIONS CONTROLLED, ON COLLEGE PLANS

Climate Dimensions	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
	(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Intellectual Orientations (.151)	(.239)	-.120	-.212	-.092
II. Absence of Intell.-Estheticism	Intellectual Orientations (.152)	(.242)	-.119	-.178	-.059
III. Cohesive and Egalitarian Estheticism	Intellectual Orientations (.143)	(.207)	.186	.256	-.070
IV. Absence of Scientism	Intellectual Orientations (.152)	(.237)	-.131	-.162	-.031
V. Humanistic Excellence	Intellectual Orientations (.150)	(.240)	.123	.206	-.083

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

TABLE XII-10

DIFFERENTIAL RACIAL EFFECTS OF FACTOR SCORE QUARTILES, WITH INTELLECTUAL ORIENTATIONS CONTROLLED, ON MATHEMATICS ACHIEVEMENT

	Control Variables[a]		Weighted Factor Climate Effect Measures Standardized to a Dichotomy		
Climate Dimensions	(a_{iN}')	(a_{iW}')	Negro Respondents	White Respondents	$\triangle_{N-W}$
I. Absence of Academic Emulation	Intellectual Orientations (.102)	(.064)	-.093	-.105	-.012
II. Absence of Intell.-Estheticism	Intellectual Orientations (.104)	(.067)	-.086	-.113	-.027
III. Cohesive and Egalitarian Estheticism	Intellectual Orientations (.102)	(.043)	.086	.146	-.060
IV. Absence of Scientism	Intellectual Orientations (.104)	(.065)	-.075	-.113	-.038
V. Humanistic Excellence	Intellectual Orientations (.102)	(.065)	.089	.102	-.013

[a] The a_{iN}' and a_{iW}' are weighted effect measures of the control variables for Negroes and whites, respectively.

CHAPTER XIII

SUMMARY

Introduction

This chapter contains a summary of the two substantive foci of the research, the methods employed, and some of the findings. It does not contain all of the important findings, nor does it contain many of the conclusions which were spelled out at the points in the analysis where the data on which they are based are presented. In the view of the authors, this is the place where conclusions belong, not in a separate section divorced from the empirical results of the investigation. To repeat even most of the detailed, yet important, findings and conclusions of the study in this chapter is simply not feasible because it would produce a chapter too long to legitimately be called a summary. Thus, the reader who wants a comprehensive overview of the study will have to take the time to read the text.

Substantive Foci of the Study

A comprehensive review of the literature on the effects of the environments of educational institutions (presented in Chapter II) revealed two unanswered, but important questions which are the foci of the present investigation. First, is the question of the effects of global factors in the high school environment on the academic behavior of students. The research presented in this report represents an attempt to help fill this gap by concentrating on three interrelated problems:

(1) Systematically measuring a number of dimensions of educational and social climates of high schools.

(2) Demonstrating the academic consequences of these dimensions for individual students while controlling relevant personal and background characteristics of the students. Thus, the type of analysis undertaken is contextual, which for this study involves characterizing students by a number of different aspects of the school environment and then determining how those who are similar in personal and background characteristics differ in their academic behavior according to the context of the school. Measures of three different categories of academic behavior serve as the dependent attributes in the analysis--college plans, academic achievement, and intellectual orientations. Four personal and family background variables are simultaneously controlled throughout most of the first part of the research--ability, father's education, year in school, and sex. These are four characteristics which a wealth of previous research has shown to be related to high school students' academic behavior.

(3) Investigating the sources of climate effects by introducing into the analysis factors from both the larger community and the formal organization of the school.

The second focus of the study is one which was not part of the original design--yet it is of critical concern to both social scientists engaged in educational research and to educators. This is the academic behavior of Negroes compared to that of whites in desegregated schools. Specifically, the objective of this phase of the larger study is to determine the relative effects of various dimensions of school climate on the academic behavior of all the small number of Negro students in the predominantly white schools selected for study and a sample of white students who are individually matched on several relevant personal and social background characteristics. Given the lack of knowledge about the behavior of Negroes in desegregated schools (Katz, 1964) and that the data included race, it was possible to make some contribution in an area of current social concern. Consequently, the U.S. Office of Education granted an extension of time and additional funds to include this second topic. Although this secondary focus is related to the objectives of the larger study in that both the climate measures and the dependent variables are the same, it is a separate research problem requiring different methods of analysis. This, coupled with the fact that it was important to keep the complex and detailed presentation of data as simple as possible, dictated that the two problem areas be presented separately in the report. Consequently, the presentation and interpretation of data for Part I, the "parent research" (or larger study) is contained in Chapters III-VII while that for the comparison of climate effects on Negroes and whites (Part II) is presented in Chapters VIII-XII.

PART I. THE PARENT RESEARCH

The Sample and Sources of Data

Data were obtained in twenty public, coeducational high schools in 1964 and 1965 from the following sources:

(1) self-administered questionnaires to 20,345 students.

(2) two academic tests from Project Talent (Flanagan, et al., 1964) administered to the student bodies--one measuring aptitude for abstract reasoning and the other measuring achievement in mathematics.

(3) self-administered questionnaires to the faculty of each school--a total of 1,029 teachers.

(4) self-administered questionnaires to the principals of the twenty schools.

(5) information such as I.Q., grade point average in English, and absenteeism from the permanent records of students.

The schools were selected in a three-stage, non-random manner from seven different geographical regions of the U.S. in an attempt to obtain institutions varying in terms of academic performance and demographic and social contexts. The procedure resulted in a sample of twenty institutions which exhibit a considerable amount of variety with respect to demographic, socio-economic, and community characteristics as well as heterogeneity in achievement as measured by comparison with national norms on the mathematics achievement test utilized in Project Talent.

Measurement of Variables

As noted above, the type of investigation conducted in this project is contextual. Thus, there are three different classes of variables included in the analysis: (1) the independent variables which are measures of various dimensions of school climate or environment; (2) "intervening" personal or individual level variables such as sex, mental aptitude, year in school, and socio-economic background (SES) which are viewed as mediating links between the school environment and individuals' academic behavior; (3) and dependent attributes which consist of three different types of academic behavior; namely, college plans, personal values regarding intellectualism and achievement, and academic achievement in the form of performance on the mathematics achievement test and grade averages in English.

a. Measures of School Climate

The procedure used in developing measures of school climate is a modified version of Selvin's and Hagstrom's formulation (1963) for classifying formal groups in terms of a large number of variables in order that group or contextual effects on the variation in behavior of members can be assessed. Thirty-nine aggregative[1] characteristics of the schools, based on data from both student and teacher questionnaires, were factor analyzed using the principal component solution and orthogonally rotated to simple structure using the Varimax method. These thirty-nine global characteristics or variables--all of which treat the respondent as an informant not respondent[2]--are from the following sources. Twenty-three of the variables are from student questionnaires and sixteen from questionnaires administered to teachers. Twenty-seven of the thirty-nine variables are scales adapted from the College Characteristics Index (Pace and Stern, 1958) and the High School Characteristics Index (Stern, 1962). The remaining twelve variables are single-item indicators of school climate, with ten of them drawn from student questionnaires and two from those administered to teachers.

Using the eigenvalue criterion, six interpretable factors were extracted which summarize, with a relatively high degree of precision, the information contained in the thirty-nine variables. Estimates of factor scores were computed (Cooley and Lohnes, 1962, p. 164) for the schools on each factor, permitting the results of the factor analysis to be transformed into measures of six dimensions of school climate for subsequent use in the multivariate analysis. The six dimensions are briefly interpreted as follows:

Factor I. Absence of Academic Emulation

This negative factor has variables with high loadings which reflect the general achievement and intellectual tone of the school environment. A school having a high positive score on the construct could be appropriately described as lacking academic excellence.

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[1] Aggregative characteristics are summarizing measures based on smaller units (in this case individuals) within formal groups.

[2] Stated differently, all of the variables which are used in the measures of school climate are individuals' perceptions of the environment, not information about their personal attitudes or characteristics.

Factor II. Student Perception of Absence of Intellectualism-Estheticism

This negative construct has a predominance of student perceptions of school environment with high loadings dealing with teacher and student pressures for intellectualism. A school with a high positive score on the factor is described as having an environment lacking an intrinsic value on the acquisition of knowledge.

Factor III. Cohesive and Egalitarian Estheticism

This factor measures the extent to which the student social system emphasizes intellectual criteria for status as opposed to the ascribed criteria of family background. It also taps the degree of social integration among students and the extent to which they value such topics as art, music and literature. Thus a school with a high positive score has a student body which is more cohesive, more egalitarian, and more committed to intellectual matters than a school with a low score.

Factor IV. Absence of Scientism

This construct, like I and II, is negative. Schools having a high positive score lack a scientific emphasis by students and staff.

Factor V. Humanistic Excellence

This positive factor, like IV, is subject-matter specific, dealing primarily with faculty and student pressures toward creating and maintaining student interest in art, humanities, social studies, and current social issues.

Factor VI. Academically Oriented Student Status System

This construct has isolated criteria for prestige among student colleagues. Schools with high positive scores on it have student bodies which socially reward intellectualism and academic performance more than schools with low scores. In addition, in high-scoring schools, students place less stress on participation in extra-curricular activities relative to low-scoring schools.

It is felt that the measures of school environment developed here are one of the chief accomplishments of the study. That is, the present research employs comprehensive and direct indicators of the normative influence of high school climates, whereas most earlier studies have relied on the average socio-economic composition of the student body as an indirect indicator of school context. Furthermore, the present study, unlike most previous research (Bidwell, 1965, p. 992) on high schools as social microcosms, has included the degree of integration of the teacher colleague group and the student society in its measures of school environment.

b. Measures of Individual Variables

The Abstract Reasoning Test (AR), a fifteen-item, multiple-choice instrument designed to measure the ability to determine inductively the logical relationships among the elements of patterns of diagrams, is employed as the measure of mental aptitude or ability.

Measures of sex, year in school, and socio-economic background were obtained from single items in the student questionnaire. Father's education is used as the indicator of SES because it has the highest correlation with a number of other indicators of socio-economic background and also because it is the best single predictor, among available measures of SES, of the most rigorous measure of achievement in the research--performance on the math test.

c. Measures of Dependent Attributes

Students' plans regarding college attendance are inferred from a single-item in the student questionnaire. Students answering "yes as a full-time student right after high school" were classified as planning to attend, and all others answering the item were classified as not planning to attend.

The first measure of academic achievement, students' performance on the Mathematics Achievement Test, is a twenty-four item, multiple-choice test designed to measure achievement in mathematics through the ninth-grade level. The second measure of achievement for students is their English grades. Each student's grades in English during his tenure in high school were converted to a mean, using a five-point numerical scale comparable to letter grades A through F.

The intellectual orientations of students, or academic values, are measured by a six-item, summated binary rating scale based on responses to items in the student questionnaire covering different topics within the broad realm of intellectualism-achievement.

Scores on the math test, grade performances in English, and scores on the scale measuring personal orientation toward intellectualism were all dichotomized as closely as possible to the medians of the respective distributions.

The Statistical Procedure

Researchers concerned with separating "contextual" effects from "individual" effects have been plagued with the problem of obtaining spurious results (Tannenbaum and Bachman, 1964). Thus, what appear to be contextual effects may in reality be statistical artifacts. Tannenbaum and Bachman have demonstrated that such spurious contextual effects are frequently obtained because the categories of the individual level variables are not precise; consequently, they can contaminate contextual effects and lead to specious findings. Likewise, if the categories of the contextual variable are not precise they can contaminate individual effects.

Tannenbaum and Bachman suggest two strategies to minimize the problem, both of which are utilized in the present analysis. First, use as many categories as possible for both the contextual and individual level variables. In this investigation, an attempt was made to achieve the optimum number of categories for both the group and individual level variables. Throughout much of the analysis, the effects of each of the climate dimensions on the dependent attributes were determined while controlling sex, father's education, ability, and year in school. Obviously the simultaneous introduction of five independent variables requires collapsing of categories on each of them, even with a sample as large as the present one. For each of the six dimensions of school climate (measured by factor scores), schools were ranked and then collapsed into quartiles. Scores on the ability measure (AR test) and father's education were collapsed into four categories.

Finally, year in school was trichotomized, with grades 9 and 10 in one category and with grades 11 and 12 retained as separate categories. The above classification scheme for contextual and individual level variables appears to result in precise measurement of these characteristics, while providing a sizable number of cases in each category, which is important for obtaining reliable estimates of effects of the independent variables on the dependent attributes.

Tannenbaum's and Bachman's second strategy for minimizing spurious effects is to employ multiple regression techniques, which provide a thorough and rigorous analysis of the relative effects of contextual and individual variables. The statistical procedure employed has been shown by Boyle (1966, unpublished) to coincide formally with multiple regression analysis of dummy variables. It is a slightly modified version of Coleman's stochastic model (1964, Chapt. 6) developed for the multivariate analysis of attribute data.[3] The model can also be used to estimate the effects of polytomous independent attributes, either ordered or unordered (Coleman, 1964, pp. 213-214), on dichotomous dependent attributes. For the multivariate case, the effect parameter for each independent attribute is an estimate of the proportion of variation in the dichotomous dependent attribute explained by that particular independent attribute while the effects of other independent attributes are controlled. Stated differently, the effect estimates may be interpreted as averages of differences between proportions positive or "high" on the dependent attribute under all combinations of the independent attributes.

It is felt that one of the major contributions of this research is the precision of the measurement of the variables and the number of variables controlled simultaneously in the analysis. For example, consider the problem of measuring the effects of the first dimension of school climate, Absence of Academic Emulation, on the college plans of individual students while simultaneously controlling the effects of sex, year in school, ability, and father's education. Introducing these five independent attributes simultaneously, partitions the sample of students into 384 categories (4 x 2 x 3 x 4 x 4 = 384), resulting in a high degree of precision for the measurement of both the climate and individual level attributes. Furthermore, Coleman's technique gives estimates of the effects of each of the five attributes on the dichotomized dependent attribute independent of the effects of the other four, providing a powerful multivariate design.

Zero-Order Climate Effects and Individual Effects on the Dependent Attributes

It was found that the zero-order effects of each of the six climate dimensions on college plans, math achievement, English grades, and intellectual orientations are in the direction predicted by the content of the factor. For example, Factor I, Absence of Academic Emulation, is negatively related to each of the dependent attributes, while Factor V, Humanistic Excellence, has positive effects on each dependent attribute. The magnitude of effects of the six climate dimensions are approximately equal for college plans and math achievement, lowest for

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[3] Boyle's chief contribution to Coleman's model is to make it more appropriate for dealing with small subsamples; that is, a more effective weighting procedure to handle the crucial problem of variation in the number of cases in cells on which the proportion differences in the dependent attribute are computed.

English grades, and second lowest for intellectual values. The negligible effects of the climate dimensions on English grades are attributed to the inadequacy of English grades as a measure of achievement between schools.[4] Consequently, English grades were deleted from the analysis as a dependent attribute when between school comparisons were made.

The weaker effects of climate dimensions on intellectualism than on college plans and math achievement were explained in terms of the lower salience of intellectualism than college attendance and math achievement for high school students, not as a result of low reliability or validity of the measure of intellectualism.[5] This interpretation is supported by evidence from both the present study (in Chapters IV and V) and other studies, both historical and contemporary.

Each of the four personal and background attributes--ability, SES (measured by father's education), year in school, and sex--is related to the dependent attributes in a manner consistent with the results of earlier studies. Of the four individual characteristics, ability has the strongest effects, overall, on the dependent attributes, with father's education having the second highest explanatory power. Furthermore, both of these personal variables are more highly associated with the dependent attributes at the zero-order level than are the six climate dimensions. These findings made it necessary to examine the effects of the climate dimensions on the dependent attributes with ability, SES, sex, and year in school simultaneously controlled because the zero-order relationships between the various aspects of the educational and social climates of the schools and students' variation in academic behavior could be a function of systematic uncontrolled differences in the personal characteristics among the student bodies of the schools.

Climate Effects on the Dependent Attributes With Individual Characteristics Controlled

The most important finding in this section is that, overall, the climate dimensions have modest but consistent effects on the college plans, math achievement, and intellectual values of students with the effects of the four relevant individual level variables controlled. Furthermore, it was demonstrated that the climate effects on college plans and math achievement persist when students' academic values (as measured by the intellectualism scale) ability, and SES are held constant. This result clearly demonstrates that the prevalent academic atmosphere of the school exerts an influence on these two attributes independent of students' internalized academic orientations, ability, and family background.[6] Taken collectively, these results lead to the conclusion that individual students' academic behavior is influenced not only by the motivating force of their home environment, scholastic ability, and value orientations but also by the pressures applied by other participants in the school setting. That is, in those schools where academic competition, achievement, and intellectualism are emphasized by faculty and other students (both at the global and more immediate, interpersonal levels), individual students tend to adopt these norms, resulting in higher achievement, educational plans, and intellectual values on their part.

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[4] That is, grades in English are not a valid and reliable measure from school to school. Furthermore, the distributions of English grades are not comparable across schools. This latter problem could have been solved by a standardization procedure. However, the original and more serious problem of variation in meaning of grades from school to school would not be eliminated by such a procedure: The "A" in English in a school with high academic standards reflects greater achievement in the subject than does an "A" in a school of lower quality.

[5] In fact, it was found that the intellectualism scale has an acceptable level of internal consistency and high predictive validity when employed as an independent variable to explain achievement and college aspirations.

The magnitude of the climate effects on college plans and math achievement with the individual level variables held constant is comparable and generally lower on intellectual values. Furthermore, the independent contributions of the individual level variables to explaining variation in students' intellectual values is generally lower than those for college plans and math performance. Evidence from Chapters IV and V of this report and from earlier research and writings indicates that this discrepancy is plausibly explained in terms of intellectualism being less salient for students than either college attendance or academic achievement because the former is less stressed at all levels of the educational system, in the larger society, and in the home backgrounds of most students. In an attempt to further understand intellectualism among these high school students, twenty-five personal and background characteristics and traits associated with the attribute were isolated. These characteristics produced a profile of the "intellectual student" similar to that of the creative student described by Getzels and Jackson (1960) and Holland (1961) and the achievement-oriented student portrayed by Strodbeck (1958).

The independent effects of the various dimensions of school climate on all three dependent attributes are consistently lower than ability and SES. These results are consistent with those of Coleman, *et al*. (1966) in their recent national study of the effects of school characteristics on the achievement and educational aspirations of individual students of varying racial and ethnic backgrounds. They found that family background and personal characteristics exert more independent influence on the academic performance of students than do characteristics of the school. Despite this fact, however, the findings of the present research regarding climate effects are of substantive importance on two different counts. First, at least fifty percent of the variation in each of the three dependent attributes is left unexplained by personal and family background characteristics which previous research has shown to be the most important in predicting variation in academic achievement and college aspirations. Secondly, the comprehensiveness and adequacy of the measures of various aspects of school climate and the statistical technique employed have decreased the likelihood of obtaining spurious contextual effects, a problem of concern to earlier research in this area.

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[6] As stated by Blau (1960) in his original formulation of structural effects (which he considers a special case of contextual effects), to demonstrate a structural effect, a relationship between the group level attribute and a dependent attribute at the individual level must be maintained while the closely related characteristic for individuals is held constant. As noted earlier, the intellectualism scale has an acceptable level of internal consistency and a high degree of validity. Thus, it provides an adequate measure, at the individual level, of the contextual properties of the school tapped by the climate dimensions.

Finally, one of the more important conclusions of this section of the research is that the extent to which the adolescent status system of the high school rewards achievement has no systematic effect on the achievement of students. This conclusion is based on two sets of findings. First, the effects of Factor VI, Academically Oriented Student Status System, has neither statistically nor substantively significant effects on math achievement when relevant personal variables are controlled. Secondly, for eight different tests, the results generally fail to support the widely quoted conclusion by Coleman (1961, p. 260-265) that the more the adolescent status system of the school rewards achievement, the more likely students of high ability are to be high achievers. Thus, the data for the present study indicate that his conclusion has only limited generality and replicability.

The Effects of Status on Academic Behavior and Their Relation to Normative Climates of Schools

Given the widespread controversy among social scientists regarding the importance of status among adolescent peers for students' performance[7] and aspirations and the general lack of support in the present research for Coleman's thesis that where academic achievement is rewarded by the adolescent culture of the school, the correlation between ability and performance is higher, it was deemed important to investigate this problem in greater detail. This was done by examining on the individual level the relationships between status and the three dependent attributes and on the social systematic level the relationships between the normative climates of schools (as measured by the six climate dimensions) and the effects of status on the dependent attributes.

Two measures of status were employed. One, available for only nine of the twenty schools, was obtained from sociometric data (the number of "leading crowd" choices received from members of the same sex in each school). The second measure is based on the respondent's subjective evaluation of his status in school. The two measures are sufficiently correlated to be used interchangeably in the analysis. Furthermore, they are roughly equally related to students' ability and family SES.

Consistent with the results of previous research, high status students are more likely to have high math scores and to plan to attend college, and less likely to express a strong commitment to intellectual values. These effects persist with father's education controlled in the analysis of college plans and with ability held constant in the analysis of math performance and intellectualism.

The introduction of a measure of peer group influence on college plans decreased by approximately fifty percent the effects of status and of father's education on this dependent attribute. This finding is consistent with the McDill-Coleman contention (1963) that high status students are subjected to more peer socialization influences to formulate and maintain college plans than are low status students. Peer group influences also show some degree of effect on math performance and intellectualism. However, these influences are independent of the relationships between status and these two dependent attributes.

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[7] Chapter II of this report presents a detailed account of this controversy.

The effects of (1) status and father's education on college plans, (2) status and ability level on math achievement, and (3) status and ability on intellectual orientations were presented by school. The magnitude of these relationships varies considerably across schools. Following Coleman's argument (1961) about the influence of adolescent status systems on the channeling of students' efforts into scholastic vs. extra-curricular activities, the proposition was examined that there are systematic relationships between the normative climates of schools (as measured by the climate dimensions) and the degree of association between status and the dependent attributes. No such relationships were found. An alternative proposition by Coleman--that the status implications of college-going varied among schools in direct proportion to the rate of college-going in schools--was not only not supported but was contradicted. The idea that a characteristic or attribute must be scarce to qualify as a determinant of status was introduced as an *ex post facto* explanation for the negative relationship between the effects of status on college plans and the proportion of students going to college.

The most important conclusion reached in this section of the analysis is that although adolescent status systems of schools may differentially reward activities, these systems do not appreciably influence students in the selection of areas where they invest their energies and resources.

Given the lack of consistent (1) effects of Factor VI (Academically Oriented Student Status System) on the dependent attributes (shown in Chapter V) and (2) relationships between Factor VI and the effects of status on the dependent attributes (shown in Chapter VI), this climate dimension was eliminated from the analysis presented in Chapters VII-XII.

Sources of Climate Effects on Academic Behavior

This section is concerned with one of the three interrelated problems of the parent research--a search for sources of variations in climate effects on students' college plans and math performance.[8] This portion of the analysis was conducted using factors from the larger community and formal organizational properties of the schools as potential source variables.

The findings are, for the most part, negative. Nevertheless, they are among the most important findings of the entire study because they challenge some of the most cherished beliefs of certain educators and social scientists concerning the influence of school and community factors on the achievement and aspirations of students.

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[8] Students' intellectual values were deleted as a dependent attribute in this section because the mass of data presented on the effects of climate dimensions and individual level attributes on intellectualism led to the conclusion that sources of intellectualism are for the most part not found in the school or larger community but are located in various aspects of child-rearing practices for which data are not available in this study.

It was found that several indicators of "intellectual" or "cultural" facilities of the community fail to meet the criteria of source variables; namely, libraries, community theatre, museums, art galleries and other similar facilities. Likewise, two rigorous indicators of community financial support to the schools--average per-pupil expenditure and teachers' salaries--are of no consequence since they are not significantly related to either college plans or math achievement. This is true despite the fact that these schools show great variation in teachers' salaries and per-pupil expenditures. Most important of all, the socio-economic context of the community or school is not a source of variation in climate effects on students' college plans and math achievement. This finding conflicts with one of the basic tenets of many educational sociologists who have relied on the average socio-economic composition of the school, neighborhood, or community as the indicator of the educational climate of the school.

Eleven different measures of school curriculum and facilities were introduced as climate source variables. Again, generally speaking, these factors have little or no consequences as source variables. These results are highly consistent with the findings of the recent nation-wide study by Coleman, et al. (1966), who showed that formal school characteristics (i.e., facilities and curriculum) account for very little variation in pupil achievement as measured by performance on standard tests.

One contextual variable introduced into the analysis does qualify as a source of school climate effects on college plans and math achievement. This is the extent of parents' interest and involvement in their childrens' performance and in school policies. This measure, labeled "Parental Press for Involvement in the High School" (PPIHS), is based on teachers' assessments of parental interest and involvement and is inferred to be an indirect measure of community interest in education as well as that of parents.

The tentative, general conclusion is drawn that community financial investment in the school and school facilities and curriculum are of little importance in accounting for the modest effects of the climate dimensions on students' academic behavior. The one contextual variable of any significance is the social commitment that parents and the community served by the school have to quality education.

PART II. CLIMATE EFFECTS ON A MATCHED SAMPLE OF NEGROES AND WHITES

Statement of the Problem

As noted at the beginning of this chapter, this phase of the larger study involves an exploratory analysis of academic differences between Negro and white students in predominantly white high schools. More specifically, the heretofore unexplored problem investigated is the relative impact of the various dimensions of school climate on the college plans, intellectual orientations, and academic performance of a matched sample of Negro and white students from the populations of the twenty schools. Thus, the climate measures and dependent attributes are the same as those in the parent research. This part of the research was conducted by examining four "working" hypotheses or propositions. Since there is a dearth of knowledge about the academic behavior of Negro students in desegregated schools, these hypotheses were merely utilized as points of departure to provide guidance through the general problem area. Furthermore, since the data did not generally support the propositions and/or raised doubts about the rationale for part of them, this resumé of findings will not be presented in relation to the working propositions.

Selection of the Matched Sample of Negroes and Whites

There were 327 Negro students in fifteen schools; thus, five of the twenty institutions were de facto segregated. The percentages of Negroes in the fifteen institutions at the time the data were collected ranged from only 0.1 to 7.9--clearly, predominantly white institutions. Given the small number of Negroes, it was not feasible to utilize the methods of the parent research which involved assessing the influence of climate dimensions on the dependent attributes while controlling several relevant personal characteristics simultaneously by higher-order partialing. A design had to be employed, however, which permitted the control of several personal and background characteristics because any purported racial differences or racial differences in climate effects could be a function of uncontrolled variation in personal and family background attributes; for example, family structural variables and socio-economic characteristics which are highly correlated with the dependent attributes.

Since there were only a small number of Negro students in the schools, it was feasible to match them individually with an equal number of whites on several relevant characteristics. The two groups were equated on the following variables: high school attended, sex, year in school, I.Q., age, and father's education. Matching was attempted but proved impossible with respect to father's occupation and several family structural variables. These variables were introduced as "test" variables at appropriate points in the analysis. It should be emphasized that despite the fact that matching was done at the individual level, its purpose was to equate the two groups to permit comparison on the dependent attributes rather than to compare the academic behavior of each student with that of his paired partner.[9]

Statistical Procedures

In order to maintain a complete sample of 327 matched pairs, stepwise multiple regression analysis was utilized to eliminate non-responses on the variables. The data were analyzed by means of the technique of multivariate analysis employed in the parent research. Techniques for testing the statistical significance of Negro-white differences with respect to climate effects were considered and discarded. Thus, tests of significance were applied only to the relationships involving non-climate variables and the three dependent attributes.

Major Findings

Numerous empirical relationships have been examined and discussed in detail in Chapters X-XII. Throughout the analysis, attention has been focussed on racial effects (in non-climate tabulations) and on differential racial climate effects. Each of these areas of concentration is summarized below. In interpreting the findings, one overriding consideration was kept in mind: These Negroes, for a number of interrelated reasons, are not typical or representative of the larger population of Negro high school students in American society. First, they come from less disadvantaged backgrounds than Negro students in general. Secondly, they live in areas which make predominantly white, middle-class high schools accessible to them. Thirdly, there appears to be a "selection" process operating which is of importance in their seeking admission to white high schools. That is, they appear to be "pioneers" (Weinstein and Geisel, 1961) or "trailblazers" in a social-psychological sense, which motivates them to seek quality education in predominantly white high schools.

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[9] For a similar approach, see Boyd (1952, p. 192).

In general (i.e., regardless of what variables are controlled), a significantly higher percentage of Negroes have college plans and score high on the intellectualism scale than do the matched whites. Part of the difference may be attributable to inflated "aspirations" (i.e., a certain lack of realism) of Negroes on both of these dependent attributes. In contrast, a slightly larger proportion of whites ($.10 > p > .05$) have high scores on the mathematics achievement test. However, statistical control of two family structural variables, number of siblings and familial "normality," reduces the original difference in achievement to practically zero. This is viewed as an especially important finding since family structural characteristics are the only variables which account for the discrepancy in achievement. These are factors which previous research has shown to have important consequences for achievement and educational aspirations in general, but they are even more important for a racial group which has a history of slavery and discrimination with its deleterious consequences for family stability.

With respect to climate effects on the three dependent attributes, the data reveal that, just as is true for the school populations in the parent research, each of the climate dimensions has effects in the expected direction on the college plans, intellectual orientations, and math achievement of both racial groups.

The data for differential climate effects on the academic behavior of the two racial groups indicate that, overall, white students are slightly but consistently more responsive to variations in the educational and social climates of the schools than are Negroes (specifically, eleven out of fifteen comparisons).[10]

Generally speaking, regardless of which family-related or personal variables are controlled,[11] there is a strong tendency for the original racial differences in the climate effects to persist. The implication of this finding is that the most important variable is color of skin; that is, racial identity. For example, the Negro is more likely to aspire to a college education than his white counterpart because he is a Negro. What is being observed here could perhaps be appropriately viewed as a "community" influence, in the sense of the total community of Negro Americans rather than the local area in which the adolescent resides. The experiences of discrimination by Negroes as a whole have been communicated to and internalized by these students so completely that not even parental influences on educational aspirations are as strong, relative to whites, as one would expect them to be. As a result, it is generally observed that the Negroes are not influenced as much by parental encouragement or the global school environment as one would expect them to be.

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[10] It is systematically the case that whites are slightly more responsive to climate variations with respect to college plans and math achievement, and Negroes' intellectual orientations are slightly more affected by the climate dimensions (with one exception) than are those of whites. Ex post facto explanations of these differences are offered at various points in Chapters X, XI, and XII.

[11] Specifically, each of the following variables was controlled: number of siblings, birth order, familial "normality," father's occupation, paternal and maternal encouragement to attend college, academic self-esteem, and control of destiny. Finally, personal orientation toward intellectualism was converted from a dependent attribute to a "test" variable to determine if it had any influence on the differential climate effects on the college plans and math achievement of the two racial groups.

Finally, the distribution of familial resources of the Negro students is appreciably lower than the white populations of the fifteen schools. This difference became apparent during the process of matching the two groups. Given 14,500 white students among which to choose, it was not possible to match on family structural characteristics. This difficulty may be readily explained. The matriarchal family of the Negro is a "carry-over" from slavery which is maintained by the Negro female's ability to find employment and the difficulty of the Negro male in securing and maintaining employment. The findings of this research emphasize the importance of the structural integrity of the family for the achievement of Negroes: The higher achievement level of the matched whites disappeared when family structural variables were controlled.

Differential access to socio-economic resources is also shown in the data. For example, it was observed that when the two cohorts were successfully matched on father's education, discrimination was reflected in lower occupational levels of Negro fathers and lower family income. Thus, the socio-economic resources which are important to academic success are more limited for the Negro students.

The admission of Negroes to desegregated, high quality schools should imply equal opportunity to learn. However, equality of educational opportunity does not exist for these students, for the Negro student does not bring to the classroom the same resources as does his white counterpart. In what should be an academically equal situation, a basic inequality exists because of disproportionate background resources for competing and achieving.

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APPENDIX A

STUDY OF HIGH SCHOOL EDUCATIONAL CLIMATES

conducted by

THE JOHNS HOPKINS UNIVERSITY

under a grant from

The United States Office of Education

Boys' Attitude Questionnaire

Name ______________________________ Age________
(Last) (First) (Middle)

School ______________________________

This questionnaire is part of a study being carried out in selected high schools, to learn about the interests and attitudes of high school students in various kinds of high school situations. We think you will find the questions interesting to answer. Try to go through the questionnaire quickly, without spending too much time on any single question. Answer the questions in order, without skipping.

Feel free to answer exactly the way you feel, for no one in this school will ever see the answers. When finished, hand the questionnaire to the research worker, who will take them directly to the University for statistical tabulation. PLEASE DO NOT OMIT ANY ITEMS.

Remember: This is an attitude questionnaire, and not a test. There are no right or wrong answers. Most of the questions can be answered by a check in a box (like this: ☑ , or by numbers on short lines (like this: _3_). Specific instructions are given where needed. Disregard the small numbers on the left of the boxes; they are only to aid in tabulating your answers in the office. If you come to a problem, raise your hand, and the research worker who has given you the questionnaire will come to your desk and answer your questions.

(You may start immediately)

9. In what grade are you? (Check one.)

1 ☐ 9th grade
2 ☐ 10th grade
3 ☐ 11th grade
4 ☐ 12th grade

10. What program are you taking in school? (Check one.)

1 ☐ not yet decided
2 ☐ vocational
3 ☐ commercial or business
4 ☐ general
5 ☐ college preparatory
6 ☐ other (What? __________________)

10a. Which subject do you like best in school? (List only one subject.)

____

11. If you had your choice of going to another school the size of this one, to a smaller one, or to a larger one, which one would you choose?

1 ☐ this size
2 ☐ smaller
3 ☐ larger

12-23. Since you have been in high school, which of the following sports, if any, have you gone out for? (Check as many as apply.)

12 ☐ none
13 ☐ basketball
14 ☐ football
15 ☐ track
16 ☐ cross-country
17 ☐ golf
18 ☐ baseball
19 ☐ wrestling
20 ☐ swimming
21 ☐ lacrosse
22 ☐ tennis
23 ☐ others (What? __________________)

24. How much time, on the average, do you spend doing homework outside school? (Check one.)

1 ☐ none or almost none
2 ☐ less than ½ hour a day
3 ☐ about ½ hour a day
4 ☐ about 1½ hours a day
5 ☐ about 2 hours a day
6 ☐ 3 or more hours a day

25. Suppose you had an extra hour in school and could either take some course of your own choosing, use the hour for athletics or some other activity, or use it for study hall. How would you use it? (Check only one.)

1 ☐ course
2 ☐ athletics
3 ☐ club or activity
4 ☐ study hall, to study
5 ☐ study hall to do something else

26. About how many evenings a week do you spend at home? (Circle the number.)

0 1 2 3 4 5 6 7

27-37. In which of the following clubs or activities are you presently a member or participant here at school? (Check as many as apply.)

27 ☐ school newspaper, magazine, or annual
28 ☐ orchestra, band, or glee club
29 ☐ National Honor Society
30 ☐ subject matter club (math club, music club, Latin club, etc.)
31 ☐ hobby clubs (stamp club, photography club, radio club, chess club, crafts, etc.)
32 ☐ debating or dramatics
33 ☐ inter-school athletics
34 ☐ service clubs (Beta Club, Key Club, Hi-Y, etc.)
35 ☐ political clubs (Young Democrats or Young Republicans)
36 ☐ social clubs, fraternities, or sororities
37 ☐ others (What? ____________________

____

____________________________________)

38. In how many of the above organizations or activities are you an officer? (Circle the number.)

0 1 2 3 4 5 6 7 8 9

39. How many records have you bought in the last month? (Circle the number of records bought.)

0 1 2 3 4 5 6 7 8 9

39a. Who is your favorite recording artist?

____

40. What type of music do you like best? (Check only one.)

1 ☐ rock and roll
2 ☐ calypso
3 ☐ other popular music
4 ☐ jazz
5 ☐ classical or semi-classical
6 ☐ folk
7 ☐ western or country

41. How often do you go to the movies? (Check one.)

1 ☐ never, or almost never
2 ☐ about once a month or less
3 ☐ about once every two or three weeks
4 ☐ about once a week
5 ☐ about twice a week
6 ☐ more than twice a week

42. With whom do you go most often? (Check one.)

1 ☐ by myself
2 ☐ with a date
3 ☐ with other boys
4 ☐ with a group of boys and girls
5 ☐ with members of my family

43. About how much time, on the average, do you watch T.V. during the school week? (Check one.)

1 ☐ none or almost none
2 ☐ about ½ hour a day
3 ☐ about 1 hour a day
4 ☐ about 1½ hours a day
5 ☐ about 2 hours a day
6 ☐ about 3 hours a day
7 ☐ 4 or more hours a day

44-47. Different people strive for different things. Here are some things that you have probably thought about. Among the things you strive for during your high school days, just how important is each of these? (Rank from 1 through 4: 1 for the highest in importance to you, 2 for the second highest, 3 for the third highest, and 4 for the lowest.)

____ pleasing my parents
____ learning as much as possible in school
____ living up to my religious ideals
____ being accepted and liked by other students

48-56. Below is a list of items for which some parents have rules for their teenage children, while others don't. (Check each item for which your parents have definite rules.)

- 48 ☐ time for being in at night on weekends
- 49 ☐ amount of dating
- 50 ☐ against going steady
- 51 ☐ time spent watching T.V.
- 52 ☐ time spent on homework
- 53 ☐ against going around with certain girls
- 54 ☐ against going around with certain boys
- 55 ☐ eating dinner with the family
- 56 ☐ no rules for any of the above items

56a. What is your favorite way of spending your leisure time?

____

____

____

____

57. Do you have a hobby?

- 1 ☐ yes (What? ____________________)
- 2 ☐ no

58. Do you do much serious reading other than what you do for your courses? (Check one.)

- 1 ☐ a great deal
- 2 ☐ much
- 3 ☐ some
- 4 ☐ little or none

59. If you could be any of the things below, which one would you most want to be? (Check only one.)

- 1 ☐ self-employed businessman
- 2 ☐ airline pilot
- 3 ☐ mayor of a city
- 4 ☐ nationally famous athlete
- 5 ☐ automobile mechanic
- 6 ☐ high school teacher

60. Do you have a car of your own?

- 1 ☐ yes (make__________ year_________)
- 2 ☐ no

61. Can you use your parents' car? (Check one.)

- 1 ☐ anytime I want it
- 2 ☐ often
- 3 ☐ sometimes
- 4 ☐ never
- 5 ☐ my parents have no car

62-66. Rank the following five activities in the order that you best like doing them. (Rank from 1 through 5; 1 is for the activity you like best, 2 is for the activity you like second best . . ., and 5 is for the activity you like least.)

- ____ enjoying art or classical music
- ____ listening to the radio or to popular records
- ____ reading
- ____ watching T.V.
- ____ dancing

67. In some schools, there seems to be one group that more or less runs things among the students. What about this school? Is there one group that seems to be always in the middle of things, or are there several groups like that? (Check one.)

- 1 ☐ one group
- 2 ☐ two groups
- 3 ☐ three groups
- 4 ☐ more than three groups

67a. What boys here in school do you go around with most often? (Give both first and last names.)

____

____

____

____

____

67b. Of all the boys in your grade, which boy . . . (Give both first and last names.)

is the best athlete? ________________

is the best student? ________________

do girls go for most? ________________

would you most like to be friends with? ________________

68-75. Among the group you go around with in school, which of the things below are important to do in order to be popular? (Check as many as apply.)

- a ☐ be a good dancer
- b ☐ have sharp clothes
- c ☐ have a good reputation
- d ☐ get good grades
- e ☐ stir up a little excitement
- f ☐ have money
- g ☐ be a leader in extra-curricular activities
- h ☐ know what's going on in the world of popular singers, T.V., and movie stars

76. Which one of the above is most important in order to be popular? (Circle the letter corresponding to the item.)

a b c d e f g h

108. Do you date? (Check one.)

1 ☐ no
2 ☐ yes, about once a month
3 ☐ yes, about once every two weeks
4 ☐ yes, about once a week
5 ☐ yes, about twice a week
6 ☐ yes, about three or four times a week
7 ☐ yes, more than four times a week

109. If yes: do you go steady with one girl?

1 ☐ yes: what is her name? ____________

2 ☐ no: which girl do you date most often?____________

110. Is the girl you mentioned above . . .

1☐ in this school?
2☐ in another high school?
3☐ graduated, and not in college?
4☐ graduated, and in college?
5☐ dropped out of school?

110a. What girl in this school would you most like to date?

____

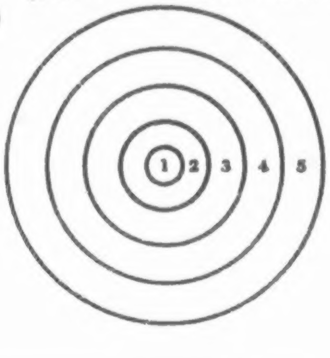
110b. Thinking of all the boys in this school, who would you most want to be like? (Give both first and last name.)

____

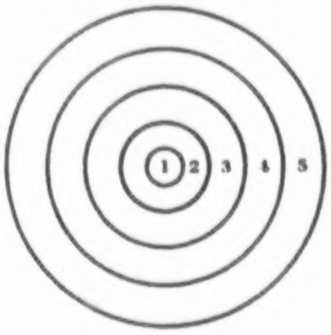
111. Of the boys you go around with most often, are most of them . . . (Check one.)

1 ☐ in this school?
2 ☐ in another high school?
3 ☐ graduated, and not in college?
4 ☐ graduated, and in college?
5 ☐ dropped out of school?

112. Suppose the circle below represented the activities that go on here at school. How far out from the center of things are you? (The center of the circle represents the center of things in school.) (Place a check where you think you are.)



113. Now, in the circle below, place a check where you would like to be.



113a. If a boy came here to school and wanted to get in with the leading crowd, what boys should he get to be friends with? (Give both first and last names.)

____

____

____

____

____

113b. Of all the teachers in this school, which one do you like best? (Give full name.)

____

114. Would you say you are part of the leading crowd in this school?

1 ☐ yes
☐ no

If no: would you like to be part of the leading crowd?

2 ☐ yes
3 ☐ no
4 ☐ don't care

115. How good, on the average, are your high school grades? (Check one.)

1 ☐ in the top quarter of my class
2 ☐ in the second quarter of my class
3 ☐ in the third quarter
4 ☐ in the lowest quarter

116. Are you . . . (Check only one.)

1 ☐ an only child
2 ☐ the oldest child in your family
3 ☐ the youngest child in your family
4 ☐ between the youngest and oldest

117. Where were you born? (Check one.)

1 ☐ in this city or county
2 ☐ outside this county but in this state
3 ☐ outside this state but in the U.S.
4 ☐ outside the U.S. (Where?__________)

118. Where was your father born? (Check one.)

1 ☐ in this city or county
2 ☐ outside this county but in this state
3 ☐ outside this state but in the U.S.
4 ☐ outside the U.S. (Where?__________)

119. Where was your mother born? (Check one.)

1 ☐ in this city or county
2 ☐ outside this county but in this state
3 ☐ outside this state but in the U.S.
4 ☐ outside the U.S. (Where?__________)

120. How much formal education did your father have? (Check one.)

1 ☐ some grade school
2 ☐ finished grade school
3 ☐ some high school
4 ☐ finished high school
5 ☐ some college
6 ☐ finished college
7 ☐ attended graduate school or professional school after college
8 ☐ don't know

121. How much formal education did your mother have? (Check one.)

1 ☐ some grade school
2 ☐ finished grade school
3 ☐ some high school
4 ☐ finished high school
5 ☐ some college
6 ☐ finished college
7 ☐ attended graduate school or professional school after college
8 ☐ don't know

122-123. Which one of the following most nearly describes the type of work your father does? Check only one answer. (If he has more than one job, check the one on which he spends the most time. If he is retired, out of work, or not living, check the one he did last.)

01 ☐ farm owner or manager
02 ☐ farm foreman
03 ☐ farm worker
04 ☐ workman or laborer--such as longshoreman, plumber's helper, mine worker, filling station attendant, etc.
05 ☐ private household worker--such as servant, butler, etc.
06 ☐ protective worker--such as policeman, sheriff, foreman, etc.
07 ☐ service worker--such as barber, waiter, etc.
08 ☐ semi-skilled worker--such as bus or cab driver, butcher, factory machine operator, etc.
09 ☐ skilled worker or foreman--such as electrician, printer, carpenter, enlisted man in the armed forces, plumber, foreman in a factory or mine, etc.
10 ☐ clerk or office worker--such as bank teller, sales clerk, bookkeeper, mail carrier, postal clerk, office clerk, etc.
11 ☐ salesman--such as real estate or insurance salesman, factory representative, etc.
12 ☐ manager--such as sales manager, store manager, office manager, business manager, etc.
13 ☐ official--such as manufacturer, officer in a large company, banker, government official, etc.
14 ☐ owner or proprietor--such as owner of a small business, wholesaler, retailer, contractor, restaurant owner, etc.
15 ☐ professional--such as physician, lawyer, accountant, clergyman, dentist, engineer, scientist, architect, etc.
16 ☐ technical--such as draftsman, surveyor, medical or dental technician, etc.
17 ☐ other--if none of the above describes your father's job, then describe his job on the lines below. (BE SPECIFIC.)

____

____

124. Are your parents living? (Check one.)

1 ☐ both living
2 ☐ only mother living
3 ☐ only father living
4 ☐ neither living

125. Does your mother have a job outside the home? (Check one.)

1 ☐ yes, full-time
2 ☐ yes, part-time
3 ☐ no

126. Are your parents divorced or separated?

1 ☐ yes
2 ☐ no

127. Do you live with . . . (Check one.)

1 ☐ mother and father
2 ☐ mother and stepfather
3 ☐ father and stepmother
4 ☐ mother only
5 ☐ father only
6 ☐ other (Write in: ________________)

128. What is your religious preference? (Check one.)

1 ☐ Protestant (What denomination? ________________________________)
2 ☐ Roman Catholic
3 ☐ Jewish
4 ☐ other (What? ____________________)

129. How often do you attend religious services? (Check one.)

1 ☐ every week
2 ☐ 1 to 3 times a month
3 ☐ less than once a month
4 ☐ never

130. How many brothers and sisters do you have? (Circle the number.)

0 1 2 3 4 5 6 7 8 9

131. During this school year, how much do you work each week outside the home? (Check one.)

1 ☐ not at all
2 ☐ less than 5 hours
3 ☐ 5 to 9 hours
4 ☐ 10 to 19 hours
5 ☐ 20 hours or more

132. Estimate the number of books in your home. (Check one.)

1 ☐ none or few (0-25)
2 ☐ one bookcase full (26-100)
3 ☐ two bookcases full (101-250)
4 ☐ three or four bookcases full (251-500)
5 ☐ a room full--a library (501 or more)

133. My family's total yearly income is approximately: (Check one.)

1 ☐ under $2,500
2 ☐ $2,500-$4,999
3 ☐ $5,000-$7,499
4 ☐ $7,500-$9,999
5 ☐ $10,000-$14,999
6 ☐ $15,000 or more
7 ☐ I don't know

134. How often do your parents attend P.T.A. meetings? (Check one.)

1 ☐ They do not belong.
2 ☐ regularly
3 ☐ occasionally
4 ☐ seldom or never

135. Suppose you had a chance to date either a cheerleader, or the girl who is the best student in class, or the best looking girl in class. Which one would you prefer to date? (Check only one.)

1 ☐ cheerleader
2 ☐ best student
3 ☐ best looking

136. If you could be remembered here at school for one of the three things below, which one would you want it to be? (Check one.)

1 ☐ brilliant student
2 ☐ athletic star
3 ☐ most popular

137. My time in this school has been . . . (Check only one.)

1 ☐ filled with fun and excitement
2 ☐ interesting and filled with hard work
3 ☐ fairly pleasant
4 ☐ somewhat dull
5 ☐ unhappy

138. Check the category which comes closest to your feeling about yourself.

1 ☐ I don't like myself the way I am; I'd like to change completely.
2 ☐ There are many things I'd like to change, but not completely.
3 ☐ I'd like to stay very much the same; there is very little I would change.

139. When you have to decide between yourself and the group . . . (Check only one.)

1 ☐ I always go along with the group.
2 ☐ I usually go along with the group.
3 ☐ I usually decide for myself.
4 ☐ I always decide for myself.

140. In general, do you think the students in this school get a square deal from the teachers and principal?

1 ☐ yes
2 ☐ no

141-142. How important is it to you personally, and how important is it to other students in this school, to get good grades? (Check one in each column.)

To you personally	To other students
1 ☐ extremely important	1 ☐ extremely important
2 ☐ important	2 ☐ important
3 ☐ not important	3 ☐ not important

143-144. How satisfying is it to you personally, and how satisfying is it to other students in this school, to work hard on studies? (Check one in each column.)

To you personally	To other students
1 ☐ extremely satisfying	1 ☐ extremely satisfying
2 ☐ satisfying	2 ☐ satisfying
3 ☐ not satisfying	3 ☐ not satisfying
4 ☐ unpleasant	4 ☐ unpleasant

145-146. How much do you personally admire students who are very bright in school, and how much do other students in this school admire students who are very bright? (Check one in each column.)

To you personally	To other students
1 ☐ admire brightness very much	1 ☐ admire brightness very much
2 ☐ admire brightness a little	2 ☐ admire brightness a little
3 ☐ don't admire it at all	3 ☐ don't admire it at all

147-153. Which of the items below fit most of the teachers in this school? (Check as many as apply.)

47 ☐ friendly
48 ☐ too strict
49 ☐ too easy with school work
50 ☐ understand problems of teenagers
51 ☐ not interested in teenagers
52 ☐ bored with their job
53 ☐ willing to help out in activities

153a. Which one honor or achievement would you most like to win in high school? (List only one.)

____

154. The best teachers in this school are . . . (Check only one.)

1 ☐ English teachers
2 ☐ foreign language teachers
3 ☐ social studies teachers
4 ☐ math and science teachers
5 ☐ art or music teachers
6 ☐ The teachers are about the same in all subjects.

155. Bill was doing well in physics class, because his hobby was electronics. One day his physics teacher asked Bill if he would act as the assistant in the class. Bill didn't know whether this was an honor to be proud of or whether he would be the "teacher's pet." How would you feel--that it would be something to be proud of, or wouldn't it matter? (Check only one.)

1 ☐ something to be proud of
2 ☐ something I wouldn't care for
3 ☐ I'd have mixed feelings.

156. Suppose you decided to agree to be the assistant in physics. What would your friends think when they found out about it? (Check only one.)

1 ☐ They would envy me and look up to me.
2 ☐ They would kid me about it, but would still envy me.
3 ☐ They would look down on me.
4 ☐ They wouldn't care one way or the other.

157-162. Among the items below, what does it take to get to be important and looked up to by the other boys here at school? (Rank from 1 through 6.)

____ coming from the right family
____ leader in activities
____ having a nice car
____ high grades, honor roll
____ being an athletic star
____ knowing a great deal about intellectual matters

163. Do you smoke?

1 ☐ yes, regularly
2 ☐ yes, occasionally
3 ☐ no

164. Do you drink beer?

1 ☐ yes, regularly
2 ☐ yes, occasionally
3 ☐ no

165. Do you drink liquor?

1 ☐ yes, regularly
2 ☐ yes, occasionally
3 ☐ no

Below is a list of true-false statements about high school: the characteristics of teachers and courses, activities of students, etc. The statements may or may not be characteristic of your high school because high schools differ from one another in many ways. You are to decide which statements are characteristic of your high school and which are not, and your answers should tell us how things really are here rather than what you would like them to be. Circle T when the statement is generally or mostly true as a description of this school, and circle F when it is generally or mostly false. Give only one response to each item. PLEASE DO NOT OMIT ANY ITEMS.

208. The student newspaper or magazine often carries short stories and poems by students. T F

209. Many teachers here stress the practical uses of their subjects in helping students to get a good job. T F

210. Students seldom get together on their own time to talk about things they have learned in class. T F

211. If a student thinks out a report carefully teachers will give him a good grade, even if they don't agree with him. T F

212. It takes more than memorizing what's in the textbook to get an "A" in courses here. T F

213. Many classes here are boring. T F

214. Students here value individualism; that is, being different from others. T F

215. It is difficult to take clear and usable notes in most classes here. T F

216. Clear and careful thinking are most important in getting a good grade on reports, papers, discussions, and tests. T F

217. Personality, pull, and bluff get students through some courses here. T F

218. Students having trouble with their courses find it difficult to get help from teachers. T F

219. This school doesn't offer many opportunities for students to get to know important works of art, music and drama. T F

220. Classes in history, literature, and art are among the best liked here. T F

221. Many teachers here are more interested in practical applications of what they are teaching than in the underlying theory. T F

222. There is a lot of interest here in learning for its own sake, rather than just for grades or for graduation credits. T F

223. Teachers require that students work at home on problems which they cannot solve in class. T F

224. Science labs here have poor equipment. T F

225. Teachers here often encourage students to consider careers in areas related to the subjects they are teaching. T F

226. Few students try hard to get on the honor roll. T F

227. Teachers clearly explain what students can get out of their classes and why it is important. T F

228. Teachers do nothing more than repeat what's in the textbook in many classes here. T F

229. Many students here want to take more courses in science than are required. T F

230. Teachers here often make cutting or sarcastic remarks to students in class. T F

231. Students here are not encouraged to take courses in such areas as art, music, or dramatics. T F

232. Very few students here ever listen to classical music. T F

233. Most students here don't do much reading. T F

234. At this school students are seldom encouraged to undertake independent projects. T F

235. Science teachers here expect and get more work out of students than do other teachers. T F

236. There is not much emphasis by teachers here on preparing for college. T F

237. Many students here are planning careers in science. T F

238. Outside of class most teachers find time to chat with students. T F

239. Teachers here go out of their way to try to liberate the student from his prejudices and biases. T F

240. A student who is interested in art or music is likely to be regarded as a little odd by other students. T F

241. Many of the students here don't do much except go to classes and study. T F

242. Some of the teachers treat questions in class as if the students were criticising them personally. T F

243. The guidance counselors here most often recommend majoring in science in college. T F

244. Teachers here encourage students to value knowledge for its own sake, rather than just for grades. T F

245. There is not much interest in science clubs among students here. T F

246. The teachers here really talk with the students, not just at them. T F

247. Student discussions on national and international news are encouraged in class. T F

248. Very few students here would be interested in a field trip to an art museum. T F

249.	There is a lot of competition for grades here.	T	F
250.	In this school teachers do not adjust assignments and projects to the individual student's interests.	T	F
251.	The teachers here encourage the students to take as many science courses as possible.	T	F
252.	Teachers here are really skillful at getting students to work to the limit of their ability.	T	F
253.	Students here tend to like science courses more than other courses.	T	F
254.	It doesn't matter who you are, at this school you are expected to be mature enough to handle your own problems.	T	F
255.	Teachers frequently urge students to consider the influence of history on current events.	T	F
256.	Students here are very much aware of the competition to get into college.	T	F
257.	Most students here dress and act pretty much alike.	T	F
258.	When students get together they seldom talk about scientific topics.	T	F
259.	Teachers here often present more material than the students can handle.	T	F
260.	A lot of students here are content just to get by.	T	F
261.	The school library has a poor collection of science books and magazines.	T	F

262-266. Do you agree or disagree that . . .

Agree	Disagree	
1 ☐	2 ☐	I am often not able to keep up with the rest.
1 ☐	2 ☐	There are a few students who control things in this school, and the rest of us are out in the cold.
1 ☐	2 ☐	I am not doing so well at school.
1 ☐	2 ☐	If students want to be part of the leading crowd around here, they sometimes have to go against their principles.
1 ☐	2 ☐	If I could trade, I would be someone different from myself.

267-268. Of the teachers at this school whom you know, how do you think most of them would rate you as a student? (Check the choices which best complete the phrase.)

A { ☐ bright / ☐ average / ☐ poor } student who { ☐ works hard / ☐ doesn't work hard }

268a. What does it take to get in with the leading crowd in this school?

____

____

____

____

269. Are you planning to finish high school?

1 ☐ yes
2 ☐ no
3 ☐ undecided

270. Are you planning to go to college? (Check one.)

1 ☐ no, never
2 ☐ yes, but not right after high school
3 ☐ yes, as a full-time student right after high school
4 ☐ yes, as a part-time student right after high school
5 ☐ undecided

271-272. How does each of your parents feel about your decision with respect to college? (Check one for each parent.)

Father	Mother	
1 ☐	1 ☐	strongly encouraged me to go
2 ☐	2 ☐	wants me to go but has not strongly encouraged me
3 ☐	3 ☐	does not care one way or the other
4 ☐	4 ☐	does not want me to go
5 ☐	5 ☐	parent is not living

273. To what extent have you discussed going to college with the teachers or guidance counselors in this school?

1 ☐ not at all
2 ☐ some
3 ☐ quite a lot

274. Now, suppose that a student in this school who had planned to go to college suddenly decided not to go. What do you think would be the reaction of most teachers in this school to the student's change of plans? (Check one.)

1 ☐ They would be very disappointed and would strongly encourage the student to go to college.
2 ☐ They would probably be disappointed but would not say anything to the student.
3 ☐ They wouldn't care whether or not the student attended college.

275. Of the people your own age with whom you spend most of your free time, how many plan to go to college or are already going to college? (Check one.)

1 ☐ none
2 ☐ few
3 ☐ some
4 ☐ most
5 ☐ all

IF YOU ARE GOING TO COLLEGE OR "UNDECIDED," CONTINUE WITH THE QUESTIONS BELOW. IF YOU ARE NOT GOING TO COLLEGE SKIP TO QUESTION 408 ON PAGE 14.

308. Check the highest level of education you expect to complete. (Check only one.)

1 ☐ plan to attend a two-year college
2 ☐ plan to get a bachelor's degree (4 years)
3 ☐ plan to do one year of graduate study (Master's Degree)
4 ☐ plan to obtain a professional degree (Medicine, Dentistry, Law, etc.)
5 ☐ plan to obtain Doctorate Degree (Ph.D.) (for example in physics, math, English, etc.)
6 ☐ I have not made a decision about my plans.

309. What will you study in college? (Check only one.)

1 ☐ undecided
2 ☐ a liberal arts program
3 ☐ a science program
4 ☐ a business program
5 ☐ engineering
6 ☐ agriculture
7 ☐ pre-medicine, predentistry, pre-law, etc.
8 ☐ education

310. When did you make a decision on how much college training you expect to complete? (Check one.)

1 ☐ before I entered high school
2 ☐ since I entered high school
3 ☐ I have not yet decided how much college to complete.

311-323. In thinking about how much college training you expect to complete, which of the categories of persons listed below have you talked to about it? (Check all those with whom you talked.)

a ☐ parents
b ☐ brother or sisters
c ☐ friends here in school
d ☐ friends or acquaintances attending college
e ☐ social studies teacher
f ☐ foreign language teacher
g ☐ mathematics or science teacher
h ☐ English teacher
i ☐ athletic coach
j ☐ guidance counselor
k ☐ another teacher
l ☐ college representative
m ☐ clergyman (minister, priest, rabbi, etc.)

324-325. Which one of the above encouraged you most to go on to college? (Circle the letter corresponding to the category of persons.)

a b c d e f g h i j k l m

325a. Now, considering all the colleges in the country, if you could completely have your choice, what would be your ideal college? (Name only one.)

____

326. Approximately what percentage of your college education do you expect that your family or relatives will pay for?

1 ☐ none
2 ☐ 25%
3 ☐ 50%
4 ☐ 75%
5 ☐ 100%

327. About what percentage do you expect to pay from summer earnings and part-time jobs?

1 ☐ none
2 ☐ 25%
3 ☐ 50%
4 ☐ 75%
5 ☐ 100%

High school students planning to go to college have different ideas about the MAIN PURPOSES OF A COLLEGE EDUCATION. Some ideas on this topic are listed below. Rate them according to their importance to you by checking one of the three boxes by each statement.

	High Importance	Medium Importance	Low Importance	
a. Provide vocational training; that is develop skills which are directly applicable to your job.	1 ☐	2 ☐	3 ☐	(328)
b. Help develop your abilities to get along with different kinds of people.	1 ☐	2 ☐	3 ☐	(329)
c. Help develop your knowledge and interests in community, national, and world problems.	1 ☐	2 ☐	3 ☐	(330)
d. Help develop your morals and values.	1 ☐	2 ☐	3 ☐	(331)
e. Prepare you for a happy marriage and family life.	1 ☐	2 ☐	3 ☐	(332)
f. Develop skills which will enable you to earn a high income.	1 ☐	2 ☐	3 ☐	(333)
g. Develop your understanding of the principles of science.	1 ☐	2 ☐	3 ☐	(334)
h. Develop your understanding of principles underlying human behavior.	1 ☐	2 ☐	3 ☐	(335)
i. Develop your understanding of such subjects as philosophy, art, literature, and music.	1 ☐	2 ☐	3 ☐	(336)
j. Provide social and athletic activities.	1 ☐	2 ☐	3 ☐	(337)

338. Which one of the above goals is most important to you? (Circle the letter corresponding to the goal.)

a b c d e f g h i j

ANSWER QUESTIONS BELOW IF YOU ARE A SENIOR PLANNING TO GO TO COLLEGE. IF YOU ARE NOT A SENIOR SKIP TO QUESTION 424a ON PAGE 15.

338a. What colleges have you applied to for admission? List the colleges on the lines below, in order of your preference. For each college, check whether you have been admitted (ADM), rejected (REJ), or do not yet know (DK).

	ADM	REJ	DK
1. ____________________	☐	☐	☐
2. ____________________	☐	☐	☐
3. ____________________	☐	☐	☐
4. ____________________	☐	☐	☐
5. ____________________	☐	☐	☐

339. How many college scholarships have you applied for? (Circle the number.)

0 1 2 3 4 5 6 7 8 9

340. How many college scholarships have you received? ("Scholarship" is defined here as any financial grant to a high school student which does not involve repayment by the student.) (Circle the number you have received.)

0 1 2 3 4 5 6 7 8 9

341-348. Please indicate the source of your scholarships. (Check as many as apply.)

1 ☐ I have received none.
2 ☐ scholarship from the National Merit Scholarship Program
3 ☐ athletic scholarship from a college or university
4 ☐ academic scholarship from a college or university
5 ☐ scholarship from the state
6 ☐ scholarship from a federal governmental agency (such as Naval R.O.T.C., etc.)
7 ☐ business or industry scholarship (such as General Motors Scholarship etc.)
8 ☐ other scholarships (What? ________
____________________________________)

349. Did you take the College Entrance Examination Board Tests? (College Boards.)

1 ☐ yes
2 ☐ no

350-364. What were the important considerations you had in mind when you were thinking about which college to attend? (Check all the things that were important to you.)

a ☐ low tuition costs and living expenses
b ☐ closeness to home
c ☐ my parents' desires
d ☐ high educational standards
e ☐ course of study offered
f ☐ ease of getting a degree
g ☐ chances of getting a scholarship
h ☐ religious character of the school
i ☐ chances of getting admitted
j ☐ friends or acquaintances I knew who went to it
k ☐ attractiveness of extra-curricular activities
l ☐ members of my family or other relatives who went to it
m ☐ small size of student body
n ☐ opportunities for part-time work
o ☐ other (What? ____________________
____________________________________)

365-366. Which one of the above was most important to you? (Circle the letter corresponding to the consideration which was most important to you.)

a b c d e f g h i j k l m n o

367. During the time you are going to college about how much time do you expect to work per week at a paying job?

1 ☐ none
2 ☐ less than 20 hours per week
3 ☐ 20 hours or more per week

368-370. In what order would you prefer to have accomplished the things below when you complete college? (Put a 1 in front of the thing you would most like to have accomplished, a 2 in front of the thing second in importance to you, and a 3 in front of the least important.)

____ be a distinguished leader in campus activities
____ complete a piece of significant research worthy of publication in a scholarly journal
____ maintain a straight "A" average over four years of college

IF YOU ARE NOT PLANNING TO GO TO COLLEGE, ANSWER QUESTIONS 408 THROUGH 424. OTHERS SKIP TO QUESTION 424a ON PAGE 15.

408-419. Check the important reasons why you are not going to college. (Check as many as apply.)

a ☐ I can't afford it.
b ☐ I decided to get married.
c ☐ I don't need a college education for my intended occupation.
d ☐ I decided to enter a non-college, training course.
e ☐ My grades aren't high enough.
f ☐ I couldn't get admitted to the college I wanted to attend.
g ☐ My high school wouldn't give me a good recommendation.
h ☐ I prefer to work rather than take time out for college.
i ☐ I decided to go into miliary service.
j ☐ Most of my friends are not going to college.
k ☐ My parents haven't encouraged me to go.
l ☐ other ______________________________

____

420. Which one of the above reasons for not going to college is most important to you? (Circle the letter corresponding to the reason which you consider the most important.)

a b c d e f g h i j k l

421. Suppose you were to change your mind and decide that you would like to go to college. How would your family react to this? (Check one.)

1 ☐ They would be happy and encourage me.
2 ☐ They would think I was doing the wrong thing and would discourage me.
3 ☐ They wouldn't care much one way or the other.

422. How would your close friends here at school react if you decided to attend college? (Check one.)

1 ☐ They would be happy and encourage me.
2 ☐ They would think I was doing the wrong thing and would discourage me.
3 ☐ They wouldn't care much one way or the other.

423. If you had more money, would you attend college?

1 ☐ yes
2 ☐ no
3 ☐ undecided

424. What do you plan to do after you are out of high school? (Check one.)

1 ☐ work at the family business
2 ☐ go directly into military service
3 ☐ marry right away and get a job
4 ☐ get a job
5 ☐ go to technical or trade school
6 ☐ undecided

424a. If your desires could be realized, what one job would you *like* to have 15 years from now? (*Be specific*; for example, truck driver, electrical engineer, high school teacher, machinist, dentist, crane operator, etc.)

____

____

424b. Thinking realistically, what job do you think you will *actually* hold 15 years from now? (*Be specific*.)

____

____

425. The *BEST* way to get ahead in life is to: (Check only one.)

1 ☐ work hard
2 ☐ have a pleasant personality and be likeable
3 ☐ know the right people
4 ☐ save your money
5 ☐ get a college education
6 ☐ be a person with a special talent such as an actor, good athlete, or singer

426-430. Rank the following five occupations in terms of their desirability for you. (Rank from 1 through 5; 1 is *most* desirable, 5 is *least* desirable.)

____ scientist
____ business executive in a large corporation
____ physician
____ college professor
____ chemical engineer

431. Among the possibilities listed below, which *one* would you most prefer in a job? (Check only one.)

1 ☐ high income
2 ☐ no danger of being fired
3 ☐ short working hours and lots of free time
4 ☐ chances for advancement
5 ☐ The work is important and gives a feeling of accomplishment.

432. How do you feel about leaving home when you finish school? (Check one.)

1 ☐ I look forward to it eagerly.
2 ☐ I have mixed feelings about it.
3 ☐ I don't want it to happen.

433. Is it easier or harder for you to get along with your parents now then it was two or three years ago? (Check one.)

1 ☐ much easier
2 ☐ somewhat easier
3 ☐ somewhat harder
4 ☐ much harder
5 ☐ no change

434. Some young people think their parents are somewhat old fashioned or out of step in their ways of looking at things. Are you parents like this? (Check one.)

1 ☐ almost always
2 ☐ quite often
3 ☐ once in awhile
4 ☐ never

435-443. Have you done any of the following since you have been in high school? (Check as many as apply.)

1 ☐ represented your school in a sport or athletic contest
2 ☐ been arrested
3 ☐ had a part in a school play or program
4 ☐ sent to juvenile court
5 ☐ cut school
6 ☐ helped a teacher after school
7 ☐ destroyed or defaced school property
8 ☐ been elected to some office by the students in school
9 ☐ run around with kids who got into trouble with the law

444. How would you rate the guidance and counseling program in this school?

1 ☐ outstanding
2 ☐ excellent
3 ☐ fair
4 ☐ poor

Now, for each of the topics listed below, indicate whether you would rather discuss the topic with a teacher at this school, a guidance counselor at this school, your parents, or your friends. (Check one person for each topic.)

	Teacher	Counselor	Parents	Friends
445. planning your high school program	1 ☐	2 ☐	3 ☐	4 ☐
446. school grades	1 ☐	2 ☐	3 ☐	4 ☐
447. personal problems	1 ☐	2 ☐	3 ☐	4 ☐
448. career plans	1 ☐	2 ☐	3 ☐	4 ☐
449. attending college	1 ☐	2 ☐	3 ☐	4 ☐

GIRLS' ATTITUDE QUESTIONNAIRE

This instrument is identical to that for boys with the following exceptions:

12-23. Is it easier for a girl to get to be important and well known among students here by making friends with a very popular girl or by dating a very popular boy?

1 ☐ making friends with a popular girl
2 ☐ dating a popular boy

42. With whom do you go most often? (Check one.)

1 ☐ by myself
2 ☐ with a date
3 ☐ with other girls
4 ☐ with a group of boys and girls
5 ☐ with members of my family

59. If you could be any of the things below, which one would you most want to be? (Check only one.)

1 ☐ owner of a ladies' clothing store
2 ☐ airline stewardess
3 ☐ social worker
4 ☐ fashion model
5 ☐ beautician
6 ☐ high school teacher

67a. What girls here in school do you go around with most often? (Give both first and last names.)

____

____

____

____

67b. Of all the girls in your grade, which girl . . . (Give both first and last names.)

is the best dressed? __________
is the best student? __________
do boys go for most? __________
would you most like to be friends with? __________

109. If yes: do you go steady with one boy?

1 ☐ yes: what is his name?

____

2 ☐ no: which boy do you date most often?

____

110. Is the boy you mentioned above . . .

1 ☐ in this school?
2 ☐ in another high school?
3 ☐ graduated, and not in college?
4 ☐ graduated, and in college?
5 ☐ dropped out of school?

110a. What boy in this school would you most like to date?

____

110b. Thinking of all the girls in this school, who would you most want to be like? (Give both first and last name.)

____

111. Of the girls you go around with most often, are most of them . . (Check one.)

1 ☐ in this school?
2 ☐ in another high school?
3 ☐ graduated, and not in college?
4 ☐ graduated, and in college?
5 ☐ dropped out of school?

113a. If a girl came here to school and wanted to get in with the leading crowd, what girls should she get to be friends with? (Give both first and last names.)

____

____

____

135. Suppose you had a chance to date either a star athlete, the boy who is the best student in class, or the best looking boy in class. Which one would you prefer to date? (Check only one.)

1 ☐ star athlete
2 ☐ best student
3 ☐ best looking

136. If you could be remembered here at school for one of the three things below, which one would you want it to be? (Check one.)

1 ☐ brilliant student
2 ☐ leader in activities
3 ☐ most popular

155. Ann was doing well in French class. One day her French teacher asked Ann if she would act as the assistant in the class. Ann didn't know whether this was an honor to be proud of or whether she would be the "teacher's pet." How would you feel--that it would be something to be proud of, or wouldn't it matter? (Check only one.)

1 ☐ something to be proud of
2 ☐ something I wouldn't care for
3 ☐ I'd have mixed feelings.

156. Suppose you decided to agree to be the assistant in French. What would your friends think when they found out about it? (Check only one.)

1 ☐ They would envy me and look up to me.
2 ☐ They would kid me about it, but would still envy me.
3 ☐ They would look down on me.
4 ☐ They wouldn't care one way or the other.

157-162. Among the items below, what does it take to get to be important and looked up to by the other girls here at school? (Rank from 1 through 6.)

___ coming from the right family
___ leader in activities
___ clothes
___ high grades, honor roll
___ being a cheerleader
___ knowing a great deal about intellectual matters

424. What do you plan to do after you are out of high school? (Check one.)

1 ☐ help at home
2 ☐ marry right away and not work
3 ☐ marry right away and also get a job
4 ☐ get a job
5 ☐ go to business school or other school
6 ☐ undecided

424a. If your desires could be realized, what one job would you like to have 15 years from now? (Be specific; for example, saleslady, nurse, secretary, housewife, school teacher, etc.)

____
____
____

424b. Thinking realistically, what job do you think you will actually hold 15 years from now? (Be specific.)

____
____
____

426-430. Rank the following five occupations in terms of their desirability for a man. (Rank from 1 through 5; 1 is most desirable, 5 is least desirable.)

___ scientist
___ business executive in a large corporation
___ physician
___ college professor
___ chemical engineer

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STUDY OF HIGH SCHOOL EDUCATIONAL CLIMATES

conducted by

THE JOHNS HOPKINS UNIVERSITY

under a grant from

The United States Office of Education

Teachers' Questionnaire

Most of the questions can be answered by a check in a box (like this: ☑ , or by numbers on short lines (like this: __3__). Specific instructions are given where needed. Disregard the small numbers to the left of the boxes; they are only to aid in tabulating your answers. If you would like to elaborate on any questions, use the blank space on the last page. All information will be held in strict confidence. PLEASE DO NOT OMIT ANY ITEMS.

7-10. Thinking only of the following four things, how important do you think they should be for a high school student? (Rank the items from 1 through 4: 1 for the most important, 2 for the second most important, . . ., and 4 for the least important.)

____ pleasing their parents
____ learning as much as possible in school
____ living up to religious ideals
____ being accepted and liked by other students

11. If you could see any one of three boys elected president of the senior class, who would you rather it be? (Check only one.)

1 ☐ a brilliant student
2 ☐ an athletic star
3 ☐ a leader in extra-curricular activities

Why? ________________________________

____

____

____

12. Suppose one of your students had a chance for two similar jobs when he completed his education: one was in this city, and one in a city the same size but in another state. Which do you think you would advise him to take?

1 ☐ the job in this city
2 ☐ the job in another city

13. If he were going to college, and had the choice between going to a good small college and a good large college or university, which would you advise?

1 ☐ small college
2 ☐ large college or university

14-17. There are many things young people can get from college. How important do you think each of the following should be for a student in his college experience? (Rank from 1 through 4.)

____ the stimulation of new ideas
____ preparation for making a living
____ campus activities and social life
____ new friends who share his interests

18. If you had a student who could go to any college he chose, which one would you most like to see him select?

1 ☐ a tax supported university or college in this state
2 ☐ a tax supported university or college in another state
3 ☐ Princeton, Yale, or Harvard
4 ☐ M.I.T. or Cal. Tech.
5 ☐ Swarthmore, Reed, Oberlin, or Antioch

19-23. Rank the following five occupations in terms of their desirability to you. (Rank from 1 through 5.)

____ writer or journalist
____ scientist
____ business executive
____ physician
____ chemical engineer

24. If "high school teacher" were ranked along with these according to its desirability, which rank would you assign to it? (Circle the appropriate number.)

1 2 3 4 5 6

25-28. Now rank the following four occupations in terms of their desirability to you. (Rank from 1 through 4.)

____ sales manager for a large business
____ trained machinist
____ proprietor of a small store
____ owner-operator of a printing shop

29. If "high school teacher" were ranked along with these according to its desirability, which rank would you assign to it? (Circle the appropriate number.)

1 2 3 4 5

30. How much job security do you have as a teacher in this school? (Check one.)

1 ☐ very little security
2 ☐ some security
3 ☐ a moderate amount of security
4 ☐ considerable security
5 ☐ very much security

31. How much opportunity to be helpful to other people does your position as a teacher provide for you? (Check one.)

1 ☐ very little opportunity
2 ☐ some opportunity
3 ☐ a moderate amount of opportunity
4 ☐ considerable opportunity
5 ☐ very much opportunity

32. How much prestige does your position as a teacher give you in the community where your school is located? (Check one.)

1 ☐ very little prestige
2 ☐ some prestige
3 ☐ a moderate amount of prestige
4 ☐ considerable prestige
5 ☐ very much prestige

33. How much opportunity for independent thought and action does your position as a teacher provide for you? (Check one.)

1 ☐ very little opportunity
2 ☐ some opportunity
3 ☐ a moderate amount of opportunity
4 ☐ considerable opportunity
5 ☐ very much opportunity

34. How much self-fulfillment (that is the feeling of being able to use one's unique capabilities, of realizing one's potential) does your position as a teacher provide for you? (Check one.)

1 ☐ very little self-fulfillment
2 ☐ some self-fulfillment
3 ☐ a moderate amount of self-fulfillment
4 ☐ considerable self-fulfillment
5 ☐ very much self-fulfillment

35. If you had it to do over again, would you enter teaching? (Check one.)

1 ☐ definitely yes
2 ☐ probably yes
3 ☐ probably no
4 ☐ definitely no

36. All things being equal, in which type of community would you most like to live? (Check one.)

1 ☐ a large metropolis
2 ☐ a suburb
3 ☐ a medium sized city
4 ☐ a small town

37. Would you rather teach in . . . (Check one.)

1 ☐ this high school
2 ☐ a private school
3 ☐ another public high school in this system
4 ☐ another public school system

38. Do you think this high school has some special characteristic distinguishing it from other high schools?

1 ☐ yes
2 ☐ no

38a. If yes: would you please note briefly what you think that characteristic is?

____

____

39. Which of the categories below comes closest to the attitude of most of the students toward the teachers in this school? (Check one.)

1 ☐ They feel close to the teachers; will confide in them; and feel that the teachers understand them.
2 ☐ They feel that the teachers are trying to help them, but don't really understand their problems.
3 ☐ They feel that the teachers are indifferent to their problems.
4 ☐ They are distrustful of the teachers and suspicious of their intentions.

40. Which of these statements best describes the appearance of students at this school? (Check one.)

1 ☐ Most or all students are neat and well groomed.
2 ☐ Many students are neat and well groomed.
3 ☐ Some students are neat and well groomed.
4 ☐ Few or no students are neat and well groomed.

41-55. In which of the following areas would you say there are problems of discipline with the students in this school? (Check all items which are problems.)

41 ☐ stealing (small items of little value)
42 ☐ stealing of a serious nature (money, cars)
43 ☐ destruction of school property
44 ☐ sex offenses
45 ☐ impertinence and discourtesy to teachers
46 ☐ fighting
47 ☐ truancy
48 ☐ physical violence against teachers
49 ☐ using profance or obscene language
50 ☐ using narcotics
51 ☐ drinking intoxicants
52 ☐ copying homework
53 ☐ cheating on tests
54 ☐ creating classroom disorder or chaos
55 ☐ violation of school rule about smoking

56-57. Do you agree or disagree that . . .

Agree	Disagree	
1 ☐	2 ☐	There are a few students who control things among the student body in this school, and the rest are out in the cold.
1 ☐	2 ☐	If a student wants to be part of the leading crowd around here, he sometimes has to go against his principles.

58. Which one of the following best characterizes the student body at this high school? (Check only one.)

1 ☐ Aptitude is high; ambition is high.
2 ☐ Aptitude is high; ambition is low.
3 ☐ Aptitude is low; ambition is high.
4 ☐ Aptitude is low; ambition is low.

59. In which one of the following subject areas do the students here seem to be most interested? (Check only one.)

1 ☐ science and mathematics
2 ☐ social studies
3 ☐ English
4 ☐ foreign languages
5 ☐ music and art

60. Which of the categories below comes closest to describing the attitude of the teachers at this school? (Check one.)

1 ☐ Teachers here feel that high school should be primarily a means of developing the intellectual capacities of the students.
2 ☐ Teachers here feel that high school should be a combination of intellectual and technical (job) training.
3 ☐ Teachers here feel that high school should be primarily a place for technical (job) training.

61-63. Suppose one of your best students was entering college. In what order would you prefer him to accomplish the three things below during his college career? (Rank in importance from 1 through 3.)

____ be a distinguished leader in campus activities
____ complete a piece of significant research worthy of publication in a scholarly journal
____ maintain a straight "A" average over four years of college

64-69. Which of the categories below fit the majority of teachers in this school? (Check as many as apply.)

64 ☐ friendly with students
65 ☐ too strict
66 ☐ too easy with schoolwork
67 ☐ understand problems of teenagers
68 ☐ not interested in teen-agers
69 ☐ willing to help out in activities

70. Are the teachers here, for the most part, satisfied with the physical facilities of the school?

1 ☐ yes
2 ☐ no

70a. Personally, what changes or additions, if any, would you like to see in the physical facilities of this school?

____

____

____

____

If you were completely free to do so, how would you change each of the following classroom practices? (Check appropriate box.)

	HAVE MORE	NO CHANGE	HAVE LESS
71. individual guidance	1 ☐	2 ☐	3 ☐
72. group pupils by ability	1 ☐	2 ☐	3 ☐
73. field trips	1 ☐	2 ☐	3 ☐
74. discipline	1 ☐	2 ☐	3 ☐
75. guest speakers	1 ☐	2 ☐	3 ☐
76. discussion of controversial issues	1 ☐	2 ☐	3 ☐
77. others ______________________________	☐	☐	☐
______________________________	☐	☐	☐

Below is a list of true-false statements dealing with a number of characteristics of high schools: kinds of courses emphasized, the traits of students, the activities and attitudes of students, etc. The statements may or may not be typical of your school because schools differ from one another in many ways. You are asked to decide which statements are typical of this high school and which are not. Your answers should tell us what you believe the environment of this school is like rather than what you might personally prefer. It is in the nature of questions of this sort that neither of the alternatives provided will always correspond exactly to the situation at a school, and thus you may feel that your responses should be qualified. But please make only one response to each item; that is, by choosing the alternative which comes closer to the answer you would like to give. Circle T when you believe the statement is generally or mostly true, and circle F when you believe it is generally or mostly false. PLEASE DO NOT OMIT ANY ITEMS.

107. The student newspaper or magazine often carries short stories and poems by students.	T	F
108. Many teachers here stress the practical uses of their subjects in helping students to get a good job.	T	F
109. Students seldom get together on their own time to talk about things they have learned in class.	T	F
110. If a student thinks out a report carefully teachers will give him a good grade, even if they don't agree with him.	T	F
111. The administration maintains friendly relations with the parents here.	T	F
112. Many students here seem bored in class.	T	F
113. Students here value individualism; that is, being different from others.	T	F
114. Teachers here feel free to express themselves, even if their views are contrary to those of the administration.	T	F
115. Clear and careful thinking are most important in getting a good grade on reports, papers, discussions, and tests.	T	F
116. Personality, pull, and bluff get students through some courses here.	T	F

117. Students having trouble with their courses find it difficult to get help from teachers. T F

118. This school doesn't offer many opportunities for students to get to know important works of art, music and drama. T F

119. Classes in history, literature, and art are among the best liked here. T F

120. Many teachers here are more interested in practical applications of what they are teaching than in the underlying theory. T F

121. There is a lot of interest among students here in learning for its own sake, rather than just for grades or for graduation credits. T F

122. Teachers require that students work at home on problems which they cannot solve in class. T F

123. Science labs here have poor equipment. T F

124. Teachers here often encourage students to consider careers in areas related to the subjects they are teaching. T F

125. Few students try hard to get on the honor roll. T F

126. The administration makes its policies for teachers clear and does not tolerate deviation. T F

127. Teachers do nothing more than repeat what's in the textbook in some classes here. T F

128. Many students here want to take more courses in science than are required. T F

129. The administration here does not encourage friendly relations between students and teachers. T F

130. Students here are not encouraged to take courses in such areas as art, music, or dramatics. T F

131. Very few students here ever listen to classical music. T F

132. Most students here don't do much reading. T F

133. At this school students are seldom encouraged to undertake independent projects. T F

134. Most parents in this school are apathetic to school policies. T F

135. There is not much emphasis by teachers here on preparing for college. T F

136. Many students here are planning careers in science. T F

137. Outside of class most teachers find time to chat with students. T F

138. Teachers here go out of their way to try to liberate the student from his prejudices and biases. T F

139. A student who is interested in art or music is likely to be regarded as a little odd by other students. T F

140. Many of the students here don't do much except go to classes and study. T F

141. Some of the teachers treat questions in class as if the students were criticising them personally. T F

142. The guidance counselors here most often recommend majoring in science in college. T F

143. Teachers here encourage students to value knowledge for its own sake, rather than just for grades. T F

144. There is not much interest in science clubs among students here. T F

145. The teachers here really talk with the students, not just at them. T F

146. Student discussions on national and international news are encouraged in class. T F

147. Very few students here would be interested in a field trip to an art museum. T F

148. There is a lot of competition for grades here. T F

149. In this school teachers do not adjust assignments and projects to the individual student's interests. T F

150. The teachers here encourage the students to take as many science courses as possible. T F

151. Teachers here are really skillful at getting students to work to the limit of their ability. T F

152. Students here tend to like science courses more than other courses. T F

153. At this school, students are expected to be mature enough to handle their own problems. T F

154. Teachers frequently urge students to consider the influence of history on current events. T F

155. Students here are very much aware of the competition to get into college. T F

156. Most students here dress and act pretty much alike. T F

157. When students get together they seldom talk about scientific topics. T F

158. Teachers here often present more material than the students can handle. T F

159. A lot of students here are content just to get by. T F

160. The school library has a poor collection of science books and magazines. T F

161. Parents of students here seem interested in their children's progress. T F

162. Many students here seem to have family problems. T F

163. Teachers here are eager to discuss their students' problems with parents. T F

164. The administration here values a friendly relationship between teachers and parents. T F

165. The administration is usually willing to comply with teachers' requests. T F

166. Parents often ask for appointments with teachers to discuss their children's school work. T F

167. How would you rate the Parent-Teacher Organization at this high school? (Check one.)

1 ☐ both constructive and useful
2 ☐ mediocre or poor
3 ☐ a useless formality
4 ☐ an obstacle
5 ☐ there isn't one at this school

168. From what high school were you graduated? (Check one.)

1 ☐ this high school
2 ☐ another high school in this city
3 ☐ another high school not in this city but in this state
4 ☐ a high school outside this state

169. Was your high school . . . (Check one.)

1 ☐ public
2 ☐ parochial or diocesan
3 ☐ private, religious affiliated
4 ☐ private, not religious affiliated
5 ☐ other (What? ____________________)

170. In what type of institution did you take the largest part of your college education? (Check one.)

1 ☐ public (tax supported) university or land grant college
2 ☐ public teachers college or normal school
3 ☐ other public college
4 ☐ nonpublic (privately supported) university
5 ☐ nonpublic teachers college or normal school
6 ☐ other nonpublic college

171. What is the highest college degree you hold? If you hold a degree not listed, check the one that is most nearly equivalent to the one you hold. Do not report honorary degrees. (Check only one.)

1 ☐ no degree
2 ☐ a degree based on less than four years' work
3 ☐ a bachelor's degree
4 ☐ a master's degree
5 ☐ a doctoral degree

172. In which of the following areas did you major as an undergraduate? If you had a double major in more than one area, choose the one in which you had the most hours. (Choose only one answer.)

1 ☐ mathematics
2 ☐ humanities (e.g. literature, history, etc.)
3 ☐ physical or biological sciences
4 ☐ social sciences (e.g. economics, psychology, sociology, etc.)
5 ☐ fine arts
6 ☐ foreign languages
7 ☐ engineering
8 ☐ business
9 ☐ physical education
0 ☐ education (other than physical education)
X ☐ other (What? ____________________)

173. What is your major field of graduate study? (Choose only one answer.)

1 ☐ I have done no graduate work.
2 ☐ educational administration and supervision
3 ☐ secondary education
4 ☐ physical education
5 ☐ some other educational specialty
6 ☐ humanities or fine arts
7 ☐ sciences, engineering, or mathematics
8 ☐ business
9 ☐ other (What? ____________________)

174. How much of your teaching time here do you spend in teaching the subject for which you are best trained? (Check one.)

1 ☐ all teaching time
2 ☐ more than half-time
3 ☐ less than half-time
4 ☐ no teaching time

175. Are you required to teach any courses for which you have not had any formal training?

1 ☐ yes
2 ☐ no

175a. If yes: what courses are they?

____

____

____

207. Have you fulfilled all the formal requirements for certification by the Board of Education for which you work?

1 ☐ yes
2 ☐ no

208. Have you ever published or are you in the process of publishing any fiction, non-fiction, or independent research, either in the form of an article for a journal, magazine, or a book? Please include any published material, no matter what the field or purpose.

1 ☐ yes
2 ☐ no

208a. If yes: please indicate the type of publication.

____

____

____

209. How many years of experience as a teacher have you had? Count this year as one year of experience. (Check one.)

1 ☐ 1-2 years
2 ☐ 3-4 years
3 ☐ 5-9 years
4 ☐ 10-14 years
5 ☐ 15-19 years
6 ☐ 20-24 years
7 ☐ 25-34 years
8 ☐ 35-44 years
9 ☐ 45 or more years

210. How long have you been a teacher in this school? (Check one.)

1 ☐ 1-2 years
2 ☐ 3-4 years
3 ☐ 5-9 years
4 ☐ 10-14 years
5 ☐ 15-19 years
6 ☐ 20-24 years
7 ☐ 25-34 years
8 ☐ 35-44 years
9 ☐ 45 or more years

211-214. Which of the following grade levels do you teach? (Check as many as apply.)

☐ 9th grade
☐ 10th grade
☐ 11th grade
☐ 12th grade

215. What is the average number of clock hours per week that you devote to the teaching profession? Include all time spent on activities which are required or definitely expected of you as part of your job whether you do the work at school, at home, or elsewhere. (Check one.)

1 ☐ less than 30
2 ☐ 30-34
3 ☐ 35-39
4 ☐ 40-44
5 ☐ 45-49
6 ☐ 50-54
7 ☐ 55-59
8 ☐ 60-64
9 ☐ 65 or more

216. During this school year, do you have a part-time job in addition to your regular teaching job here?

1 ☐ yes
2 ☐ no

216a. If yes: what sort of work do you do? (Be specific.)

____

____

216b. How many hours, on the average, do you work each week at your part-time job?

____ hours

217. How did you spend most of last summer? (Check only one.)

1 ☐ vacationing in the company of other teachers
2 ☐ vacationing with family, friends, or alone
3 ☐ taking courses in a college or university
4 ☐ working ____ hours a week as a ________________________
5 ☐ teaching summer school or tutoring
6 ☐ other (Specify: ________________________________)

218-228. Do you belong to any organizations; clubs; lodges; or veterans', sports, or church groups? (Check as many as apply.)

18 ☐ political clubs (League of Women Voters, Republican or Democratic Clubs)
19 ☐ fraternal organizations (Elks, etc.)
20 ☐ veterans' organizations (American Legion, V.F.W., etc.)
21 ☐ civic or service clubs (Rotary, Chamber of Commerce, etc.)
22 ☐ religious social groups (Knights of Columbus, etc.)
23 ☐ hobby or sports groups
24 ☐ youth organizations (YMCA, Scouts, Campfire Girls, etc.)
25 ☐ N.E.A.
26 ☐ country club
27 ☐ American Federation of Teachers
28 ☐ other (Which ones? ____________
____
____________________________)

229. How do you lean in national politics? (Check one.)

1 ☐ toward the more liberal Democrats
2 ☐ toward the more conservative Democrats
3 ☐ toward the more liberal Republicans
4 ☐ toward the more conservative Republicans
5 ☐ toward a third party (Which?
____________________________)
6 ☐ I have no party leanings.

230. What is your current religious preference? (Check one.)

1 ☐ Protestant (Which denomination?
____________________________)
2 ☐ Roman Catholic
3 ☐ Jewish
4 ☐ other (Write in: ____________)

231. What is your age? (Check one.)

1 ☐ under 21 years
2 ☐ 21-25 years
3 ☐ 26-30 years
4 ☐ 31-35 years
5 ☐ 36-40 years
6 ☐ 41-45 years
7 ☐ 46-55 years
8 ☐ 56-65 years
9 ☐ 66 or over

232. How much formal education did your father have? (Check one.)

1 ☐ some grade school
2 ☐ finished grade school
3 ☐ some high school
4 ☐ finished high school
5 ☐ some college
6 ☐ finished college
7 ☐ M.A., Ph.D., Ed.D., or professional degree

233. What is your marital status? (Check one.)

1 ☐ single, never married
2 ☐ married
3 ☐ widowed
4 ☐ divorced or legally separated

233a. If married now, or ever married, what is (was) your spouse's occupation?

Job (Please be specific: ____________
____________________________)

233b. Type of employer or firm (NOT THE SPECIFIC NAME, but the general type -- such as "federal government," or "large airplane factory," or "owns small retail grocery store"):

____
____
____

234. What is your sex?

1 ☐ male
2 ☐ female

In order to test the statistical adequacy of our sample, we need to know the name of each teacher who participates. The questionnaire will not be identified with your name; all responses are completely confidential.

Your name: ____________________________

Your address: ____________________________

As you know, this is a study of the values of the student body of this high school and the various groups within it as they affect a boy's or a girl's path through high school and beyond. The categorical questions above provide only a crude way of learning this. We would appreciate any further comments you might have about the school or its students which are relevant to our purpose. You may use the remaining space in the questionnaire, or, if necessary, an added sheet.

THANK YOU VERY MUCH FOR YOUR COOPERATION, AND OUR BEST WISHES TO YOU!

STUDY OF HIGH SCHOOL EDUCATIONAL CLIMATES
conducted by
THE JOHNS HOPKINS UNIVERSITY
under a grant from
The United States Office of Education

Principals' Questionnaire

General School Characteristics*

*Source: Project Talent

General Directions:

Mark an "X" in the parentheses (X) in front of the answer you choose for each question. Be sure to mark only one answer for each question, unless the question specifically states that you may mark more than one. A few of the questions ask you to write in some numbers. Please write as legibly as possible. If you choose the option "Other (Specify)" for any question, be sure to mark an "X" in the parentheses as well as writing in your answer on the line provided. Also note that many of the questions refer to last school year (i.e., the 1963-64 academic year). PLEASE DO NOT OMIT ANY ITEMS. ALL ANSWERS ARE CONFIDENTIAL. THANK YOU VERY MUCH FOR YOUR COOPERATION.

1. Type of secondary school:

( ) 1. General comprehensive high school
( ) 2. Academic or college preparatory high school only
( ) 3. School specializing in commercial or office subjects
( ) 4. School exclusively for superior students

2. Grades included in your school:

( ) 1. 9-12
( ) 2. 10-12
( ) 3. 11-12

3. Type of accreditation or official recognition:

( ) 1. Regional only
( ) 2. State only
( ) 3. Regional and State
( ) 4. Other (specify)____________
____
( ) 5. None

4. Does your school have midyear promotions?

( ) 1. Yes
( ) 2. No

5. How many school days were there in your school year last year? (Write in on the line below.)

________days

6. How many class periods a day does each student usually spend in school?

( ) 1. 3 or fewer
( ) 2. 4
( ) 3. 5
( ) 4. 6
( ) 5. 7
( ) 6. 8 or more

7. What is the usual length of a class period?

( ) 1. 30 minutes or less
( ) 2. About 35 minutes
( ) 3. About 40 minutes
( ) 4. About 45 minutes
( ) 5. About 50 minutes
( ) 6. About 55 minutes or more

8. What size is your average instructional class in science and math?

( ) 1. 5 or less
( ) 2. 6-8
( ) 3. 9-11
( ) 4. 12-14
( ) 5. 15-17
( ) 6. 18-20
( ) 7. 21-23
( ) 8. 24-26
( ) 9. 27-29
( ) 10. 30-32
( ) 11. 33-35
( ) 12. 36 or more

9. What is your average instructional class size in non-science courses?

( ) 1. 8 or fewer
( ) 2. 9-11
( ) 3. 12-14
( ) 4. 15-17
( ) 5. 18-20
( ) 6. 21-23
( ) 7. 24-26
( ) 8. 27-29
( ) 9. 30-32
( ) 10. 33-35
( ) 11. 36-38
( ) 12. 39 or more

10. What is the average amount of homework per day which a student in your school is expected to do?

( ) 1. Students are not usually given out of class assignments.
( ) 2. Less than 1 hour
( ) 3. 1-2 hours
( ) 4. 2-3 hours
( ) 5. 3-4 hours
( ) 6. 4-5 hours
( ) 7. More than 5 hours

11. How many study halls or periods a week does the average student in your school have during school hours?

( ) 1. None
( ) 2. 1
( ) 3. 2
( ) 4. 3
( ) 5. 4
( ) 6. 5
( ) 7. 6
( ) 8. 7
( ) 9. 8
( ) 10. 9 or more

12. For which of the following special groups does your school provide special, separate classes? Mark as many as apply.

( ) 1. Low I.Q. or mentally retarded
( ) 2. Behavior or adjustment problems, or record of delinquency
( ) 3. Physical handicaps (specify which)________________

____

( ) 4. Non-English speaking
( ) 5. Rapid learners
( ) 6. Special skills or talents (e.g., art, music, science)
( ) 7. Math difficulty
( ) 8. Reading difficulty
( ) 9. Speech difficulty
( ) 10. Special provision for all (other) exceptional children is made within their regular class groups.
( ) 11. All (other) exceptional children are integrated into regular classes without special privileges.
( ) 12. Other groups (specify)

____

13. Which of the following types of recognition for achievement are available in your school? Mark all that apply.

( ) 1. Honors courses or other special classes
( ) 2. Privilege of taking additional work
( ) 3. Dean's list, honor roll, or other published list
( ) 4. National Honor Society or equivalent club
( ) 5. Special prizes or awards
( ) 6. Other special recognition (specify)________________

____

14. Does your school provide an accelerated curriculum for superior students? Mark all that apply.

- ( ) 1. Yes, student classified as "superior" may enter an advanced curriculum in any course.
- ( ) 2. Yes, advanced curricula are available in all courses for students classified as "superior" in that course area.
- ( ) 3. Yes, in one or more science courses for students classified "superior" in science
- ( ) 4. Yes, in one or more math courses for students classified "superior" in math
- ( ) 5. Yes, in one or more language courses for students classified "superior" in language
- ( ) 6. Yes, in one or more courses other than math, science, or languages for students classified "superior" in that course area
- ( ) 7. No

15. What opportunity is there for students in your school to obtain advanced placement and/or credit in college?

- ( ) 1. We offer one or more courses that use the syllabuses of the Advanced Placement Program of the College Entrance Examination Board.
- ( ) 2. We offer our own advanced courses to superior students and they take the Advanced Placement Tests of the College Entrance Examination Board.
- ( ) 3. We offer no special advanced courses, but superior students from our school have qualified for advanced placement in college by taking the Advanced Placement Tests of College Entrance Examination Board.
- ( ) 4. Particular colleges that are familiar with our program give advanced placement and/or credit to superior students in certain of their courses for which they feel our program provides satisfactory equivalent instruction.
- ( ) 5. No special opportunity for advanced placement in college is available.

16. What do the grades in subjects generally represent?

- ( ) 1. Primarily level of subject matter achievement
- ( ) 2. Primarily level of achievement relative to the achievement of classmates
- ( ) 3. Primarily achievement in relation to ability
- ( ) 4. Separate grades for achievement and achievement in relation to ability are given for each course.
- ( ) 5. Separate grades are given for achievement and achievement relative to the achievement of classmates for each course.
- ( ) 6. Other (specify)________________________________

17. What kind of final course grades are given in your school? Mark all that apply.

- ( ) 1. Letter grades
- ( ) 2. Numerical grades
- ( ) 3. Pass-Fail; or Pass-Doubtful-Fail; or Excellent-Satisfactory-Unsatisfactory; or similar two or three-category system
- ( ) 4. Written descriptive paragraphs
- ( ) 5. Conference with parent
- ( ) 6. Other (specify)________________________________

18. What is the principal basis used to assign pupils to most instructional classes in your school?

( ) 1. Intelligence or aptitude test scores
( ) 2. Achievement test scores
( ) 3. School marks
( ) 4. Judgments of teachers or principal
( ) 5. Some combination of the above factors
( ) 6. Other (specify)______________
____
( ) 7. No effort is made to assign pupils to particular instructional classes.

19. Which of the following statements best describes your school's summer program?

( ) 1. Students can take one repeat course only.
( ) 2. Students can take as many as two courses, but only repeat work.
( ) 3. Certain students can take one course of new work.
( ) 4. Certain students can take as many as two courses of new work.
( ) 5. There is no summer program in this school system.
( ) 6. Other (specify)______________
____

20. Which of the following kinds of courses are offered by your school system in an organized summer school program?

( ) 1. No courses are offered.
( ) 2. Non-credit courses only
( ) 3. Courses creditable toward high school graduation only
( ) 4. Both credit and non-credit courses

21. If a foreign language is studied by a pupil, how many years work is ordinarily required for him to obtain graduation credit for that language?

( ) 1. $\frac{1}{2}$
( ) 2. 1
( ) 3. $1\frac{1}{2}$
( ) 4. 2
( ) 5. $2\frac{1}{2}$
( ) 6. 3
( ) 7. $3\frac{1}{2}$ or more

22. In which of the following areas has your school taken part in a large scale inter-system tryout of a special, experimental curriculum?

( ) 1. Math only
( ) 2. Science only
( ) 3. Non-science only
( ) 4. Math and science only
( ) 5. Math and non-science only
( ) 6. Science and non-science, not math
( ) 7. Math, science, and non-science
( ) 8. None

23. In which of the following areas has your school developed and tried out its own special, experimental curriculum?

( ) 1. Math only
( ) 2. Science only
( ) 3. Non-science only
( ) 4. Math and science only
( ) 5. Math and non-science only
( ) 6. Science and non-science, not math
( ) 7. Math, science, and non-science
( ) 8. None

24. Which of the following statements best describes the current use of teaching machines in your school? (Teaching machines may be thought of as individual self-instructional devices which automatically provide both learning material and answers to student responses. They do not include the usual educational films, slides, educational TV, etc.)

( ) 1. They are not now used; no use is foreseen within the next year or so.
( ) 2. They are not now used, but plans are being made to experiment with their use during the next year or so.
( ) 3. They are now being used sparingly on an experimental basis.
( ) 4. They are now being used regularly in a few cases.
( ) 5. They are now being used regularly in many instances.
( ) 6. Other (specify)____

25. Which of the following best describes the changes which occurred in your active enrollment between the academic years 1962-63 and 1963-64?

( ) 1. Up, by about 1-10%
( ) 2. Up, by about 11-20%
( ) 3. Up, by 21% or more
( ) 4. About the same for the two years
( ) 5. Down, by about 1-10%
( ) 6. Down, by about 11-20%
( ) 7. Down, by 21% or more

26. Estimate the average daily percentage of absenteeism in your school during last year.

( ) 1. 2% or less
( ) 2. 3-5%
( ) 3. 6-8%
( ) 4. 9-11%
( ) 5. 12-14%
( ) 6. 15-17%
( ) 7. 18-20%
( ) 8. 21-23%
( ) 9. 24-27%
( ) 10. 28% or more

27. Which of the following best describes the tenure situation in your school system?

( ) 1. There is no formal tenure system at this time.
( ) 2. Tenure is awarded to some teachers, at the discretion of school officials.
( ) 3. It is the policy to place teachers on tenure, after a period of time which depends on the case in question.
( ) 4. Teachers are automatically placed on tenure after a certain fixed period of time prescribed by school system regulations.

28. In which of the following areas do you feel that your school now needs some additional staff members? Mark all that apply.

( ) 1. Administrative
( ) 2. Supervisory
( ) 3. Counseling and guidance
( ) 4. Classroom teachers
( ) 5. Clerical
( ) 6. Janitorial - maintenance

29. About how many books does your school have in its library?

( ) 1. Less than 300
( ) 2. 300-599
( ) 3. 600-899
( ) 4. 900-1199
( ) 5. 1200-1499
( ) 6. 1500-1799
( ) 7. 1800-2099
( ) 8. 2100-2399
( ) 9. 2400-2699
( ) 10. 2700 or more

30. About how old is the main building of your school plant?

( ) 1. Less than 5 years old
( ) 2. 5-9 years
( ) 3. 10-14 years
( ) 4. 15-19 years
( ) 5. 20-24 years
( ) 6. 25-29 years
( ) 7. 30-34 years
( ) 8. 35-39 years
( ) 9. 40-44 years
( ) 10. 45 years or more

31. About how long since your school received its last major renovation?

☐ 1. Less than 3 years ago
☐ 2. 3-5 years ago
☐ 3. 6-8 years ago
☐ 4. 9-11 years ago
☐ 5. 12-14 years ago
☐ 6. 15-17 years ago
☐ 7. 18-20 years ago
☐ 8. 21-23 years ago
☐ 9. 24 or more years ago
☐ 10. Has never had a major renovation

32. Does your school system have midyear graduations?

☐ 1. Yes, in all or almost all cases
☐ 2. In elementary schools, but not in high schools
☐ 3. In high schools, but not in elementary schools
☐ 4. No
☐ 5. Other (specify)____________

____

33. Which of the following extra-curricular activities are offered by your school? Mark as many as apply.

☐ 1. Student Government
☐ 2. School newspaper
☐ 3. School magazine and/or annual
☐ 4. Inter-school athletics for boys
☐ 5. Inter-school athletics for girls
☐ 6. Intramural athletics for boys
☐ 7. Intramural athletics for girls
☐ 8. Orchestra and/or band
☐ 9. Glee club
☐ 10. Fraternities, sororities, or other exclusive social clubs
☐ 11. National Honorary Society
☐ 12. Subject matter clubs (as math club, music club, Latin club, etc.)
☐ 13. Chess club
☐ 14. Hobby clubs (as stamp club, model airplane club, Hi-Fi club, etc.)
☐ 15. Drama, plays
☐ 16. Debate
☐ 17. Dances
☐ 18. Service clubs (as Key club, wheel club, Hi-Y, etc.)
☐ 19. Religious clubs (as Newman club, etc.)
☐ 20. Other (specify)____________

____

34. Does your school have homogeneous grouping of students into classes, to take care of different ability levels?

☐ 1. Yes, for all courses
☐ 2. Yes, for many courses
☐ 3. Yes, for a few courses
☐ 4. No

35. How many tracks does your school have?

☐ 1. One track
☐ 2. One track with electives
☐ 3. Two tracks
☐ 4. Three tracks
☐ 5. Four or more tracks

36. What is the policy on acceleration in your school?

☐ 1. Bright students are permitted to graduate from high school in less than the normal time by taking summer courses.
☐ 2. Bright students are permitted to graduate from high school in less than the normal time by taking more than the minimal number of courses during the school year.
☐ 3. Bright students are permitted to graduate from high school in less than the normal time by taking examinations for credit in courses they have not taken.
☐ 4. No acceleration is permitted.
☐ 5. Other (specify)____________

____

37. What is the policy in your school regarding promotion of slow learners?

☐ 1. The pupil must repeat courses in which he has done failing work.
☐ 2. The pupil must repeat courses in which he has done failing work if he wishes to receive credit for them.
☐ 3. The policy is 100% promotion.
☐ 4. Other (specify)____________

____

38. About how many full-time teachers were on your teaching staff last school year, not counting counselors and administrative personnel? (Include the number of full-time equivalents of part-time teachers.) Write in the number on the line below.

__________teachers

39. About how many part-time teachers were on your teaching staff last school year on a regular basis? (Do not include substitutes or those appointed for less than one school year.) Write in the number on the line below.

__________teachers

40. For last school year, about what percentage of your full-time teachers were men?

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All

41. About how many full-time teachers left your school during the last school year and had to be replaced? Write in the number on the line below.

__________teachers

42. For last school year, about how many of your full time teachers had a Bachelor's degree, but not a Master's or a Doctor's degree? Write in the number on the line below.

__________teachers

43. For last school year, about how many of your full-time teachers had a Master's degree, but not a Doctor's degree? Write in the number on the line below.

__________teachers

44. For last school year, about how many of your full-time teachers had a Doctor's degree? Write in the number on the line below.

__________teachers

45. For last school year, about what percentage of your full-time teaching staff was fully certified by your state? (Do not include those holding temporary or provisional certification.)

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All

46. For last school year, about what percentage of your full-time teaching staff spent more than half of their teaching time teaching in their major area of preparation?

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All

47. For last school year, about how many of your full-time teachers had some graduate training in one or more of the subject matter areas they taught? Write in the number on the line below.

__________teachers

48. For last school year, what was the annual starting salary in your school for male secondary teachers with a Bachelor's degree and no experience? Write in the salary on the line below.

$__________per year

49. For last school year, what was the annual starting salary in your school for female secondary teachers with a Bachelor's degree and no experience? Write in the salary on the line below.

$__________per year

50. About what percentage of the pupils attending your school this school year attended a different school last year? (Do not include pupils who started in the lowest grade in your school this year.)

( ) 1. 0-4%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25-29%
( ) 7. 30-34%
( ) 8. 35-39%
( ) 9. 40-44%
( ) 10. 45-49%
( ) 11. 50-54%
( ) 12. 55% or more

51. About what percentage of the pupils who attended your school last school year are now attending a different school? (Do not include graduates.)

( ) 1. 0-4%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25-29%
( ) 7. 30-34%
( ) 8. 35-39%
( ) 9. 40-44%
( ) 10. 45-49%
( ) 11. 50-54%
( ) 12. 55% or more

Questions 52 through 58 refer to the table of percentages below. For each item mark an "X" in the parentheses to show the correct percentage.

For last school year, about what percentage of your pupils were in each of the following school programs?

Percentage Category:	None	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	All
52. College Prep.	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
53. Commercial and/or Distributive Educ.	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
54. Industrial, Trade and/or Vocational	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
55. Diversified Co-operative Educ.	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
56. Agricultural	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
57. General Diploma (not one of the above)	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
58. Other (not one of the above) Specify__________ __________ __________	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

59. During the last school year, about what percentage of your students were required to appear before juvenile courts for one or more offenses?

( ) 1. None
( ) 2. 1%
( ) 3. 2%
( ) 4. 3%
( ) 5. 4%
( ) 6. 5%
( ) 7. 6%
( ) 8. 7%
( ) 9. 8%
( ) 10. 9% or more

60. On the average, about what percentage of all boys who enter your 10th grade drop out before graduation? (Do not include boys who transfer in your calculations.)

( ) 1. 0-9%
( ) 2. 10-19%
( ) 3. 20-29%
( ) 4. 30-39%
( ) 5. 40-49%
( ) 6. 50% or more

61. On the average, about what percentage of all girls who enter your 10th grade drop out before graduation? (Do not include girls who transfer in your calculations.)

( ) 1. 0-9%
( ) 2. 10-19%
( ) 3. 20-29%
( ) 4. 30-39%
( ) 5. 40-49%
( ) 6. 50% or more

62. About what percentage of the boys in your graduating senior class last year went on to college?

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All

63. About what percentage of the girls in your graduating senior class last year went on to college?

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All

64. Approximately what percentage of your students go on to get some post high school education or training of some kind other than the usual junior college or 4-year college program? (Do not include military service or post graduate high school work.)

( ) 1. Less than 5%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25-29%
( ) 7. 30-34%
( ) 8. 35-39%
( ) 9. 40-44%
( ) 10. 45% or more

65. Estimate the percentage of your students who go on specifically to junior college (whether or not they intend to continue their college work elsewhere, later).

( ) 1. Less than 5%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25-29%
( ) 7. 30-34%
( ) 8. 35-39%
( ) 9. 40-44%
( ) 10. 45% or more

66. During last school year, what percentage of your students took some course or special classwork in remedial arithmetic or remedial mathematics?

( ) 1. 0-4%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25% or more

67. During last school year, what percentage of your students took some course or special classwork in remedial reading and/or remedial English?

( ) 1. 0-4%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25% or more

68. For last school year, what percentage of your students took repeat or remedial summer school work?

( ) 1. 0-4%
( ) 2. 5-9%
( ) 3. 10-14%
( ) 4. 15-19%
( ) 5. 20-24%
( ) 6. 25% or more

69. About what percentage of boys in your school are members of fraternities?

( ) 1. No fraternities at this school
( ) 2. 0-4%
( ) 3. 5-9%
( ) 4. 10-14%
( ) 5. 15-19%
( ) 6. 20-24%
( ) 7. 25-29%
( ) 8. 30-34%
( ) 9. 35-39%
( ) 10. 40-44%
( ) 11. 45-49%
( ) 12. 50-54%
( ) 13. 55% or more

70. About what percentage of girls in your school are members of sororities?

( ) 1. No sororities at this school
( ) 2. 0-4%
( ) 3. 5-9%
( ) 4. 10-14%
( ) 5. 15-19%
( ) 6. 20-24%
( ) 7. 25-29%
( ) 8. 30-34%
( ) 9. 35-39%
( ) 10. 40-44%
( ) 11. 45-49%
( ) 12. 50-54%
( ) 13. 55% or more

71. For last school year, what percentage of your students took new work in summer school?

( ) 1. None, because of school policy
( ) 2. 0-4%
( ) 3. 5-9%
( ) 4. 10-14%
( ) 5. 15-19%
( ) 6. 20% or more

72. During last school year, what percentage of your students were on half-day sessions (i.e., double shifts)?

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All of them

73. Has a citizens group made a study of your school in the last three years?

( ) 1. Yes, an age-grade study
( ) 2. Yes, a study other than age-grade
( ) 3. No, but an age-grade study is planned for this year or next
( ) 4. No, but a study other than age-grade is planned for this year or next
( ) 5. No, and no study is currently planned

74. For approximately what percentage of your students are one or both parents members of the PTA?

( ) 1. No PTA
( ) 2. Less than 7%
( ) 3. 7-13%
( ) 4. 14-20%
( ) 5. 21-27%
( ) 6. 28-34%
( ) 7. 35-41%
( ) 8. 42-48%
( ) 9. 49-55%
( ) 10. 56-62%
( ) 11. 63% or more

75. On the average, how often does your PTA meet?

( ) 1. About once a week or oftener
( ) 2. About once every two weeks
( ) 3. About once every three weeks
( ) 4. About once every four weeks
( ) 5. About once every five weeks
( ) 6. About once every six weeks
( ) 7. About once every seven weeks
( ) 8. About once every eight weeks
( ) 9. About once every nine or more weeks
( ) 10. Only irregularly
( ) 11. There is currently no organized PTA in this school.

76. The residences in the area served by your school are best described as primarily

( ) 1. expensive private homes
( ) 2. moderate-priced homes
( ) 3. low cost homes
( ) 4. high-rental apartments
( ) 5. moderate-rental apartments
( ) 6. low rental apartments
( ) 7. low income areas
( ) 8. about equally apartments and homes

77. Students in your school come from areas which are best described as primarily

( ) 1. urban residential
( ) 2. urban industrial
( ) 3. urban commercial
( ) 4. suburban residential
( ) 5. suburban industrial
( ) 6. suburban commercial
( ) 7. scattered over the entire city (larger than 5000 people)
( ) 8. small town (under 5000 people
( ) 9. rural - farm
( ) 10. Other (specify)______________

____

78. In dollars per year, what was the average per-pupil expenditure for all purposes in your school system last year? (Write in in the blank provided.)

$__________per year

79. In dollars per year, what was the average per-pupil expenditure for all purposes in your school last year? (Write in in the blank provided.)

$__________per year

80. What is the current school tax rate in the community where your school is located? (Write in in dollars per $1000 of evaluation in the blank provided.)

$_________per year per $1000 of evaluation

81. Approximately what percentage of school support is obtained from local (city, county, school district) sources?

( ) 1. None
( ) 2. 0-9%
( ) 3. 10-19%
( ) 4. 20-29%
( ) 5. 30-39%
( ) 6. 40-49%
( ) 7. 50-59%
( ) 8. 60-69%
( ) 9. 70-79%
( ) 10. 80-89%
( ) 11. 90-99%
( ) 12. All

82. Which of the following community facilities are readily available to the students in your school? Mark an "X" for all that apply.

( ) 1. Public Library
( ) 2. Museum
( ) 3. Opera
( ) 4. Concerts
( ) 5. Community Theater, Amateur Theater
( ) 6. Legitimate Professional Stage
( ) 7. 4-H Club Chapter
( ) 8. Boy Scout Troop or similar group
( ) 9. Girl Scout Troop or similar group
( ) 10. Public Recreation Center
( ) 11. Public Swimming Facilities
( ) 12. Future Nurses Club
( ) 13. Art Gallery
( ) 14. Teen-age Centers
( ) 15. Future Farmers of America
( ) 16. Future Teachers of America
( ) 17. Other (specify)

____

____

____

83. How many years have you been a principal (or assistant principal) in any school?

( ) 1. Fewer than 5
( ) 2. 5-9
( ) 3. 10-14
( ) 4. 15-19
( ) 5. 20-24
( ) 6. 25 or more

84. How long have you been principal in this school?

( ) 1. This is my first year.
( ) 2. This is my second year.
( ) 3. This is my third year.
( ) 4. 3-5 years
( ) 5. 6-8 years
( ) 6. 9-11 years
( ) 7. 12-14 years
( ) 8. 15-17 years
( ) 9. 18-20 years
( ) 10. 21 years or more

85. What is the highest earned college degree you hold?

( ) 1. No college degree
( ) 2. Junior College or less-than-four-year teachers college degree
( ) 3. Bachelor's degree or four-year teachers college degree
( ) 4. Master's degree
( ) 5. Professional Diploma (Master's + 30 graduate hours)
( ) 6. Doctor's degree
( ) 7. Other (specify)____________

____

86. Which of the following honorary degrees do you hold if any?

( ) 1. No honorary degree
( ) 2. Litt. D. (Doctor of Literature or Letters)
( ) 3. LL.D. (Doctor of Laws)
( ) 4. D. Sc. (Doctor of Science)
( ) 5. Other (specify)____________

____

( ) 6. More than one of the above listed degrees

Continued on next page

We would appreciate any comments you might have about your school, its students, and staff which are relevant to our purpose of assessing the impact of educational and social climates of high schools on the academic and social behavior of adolescents.

Inventory of Aptitudes and Abilities *

Test Booklet

General Directions:
Be sure that your name and the name of your school are on your answer cards.

DO NOT OPEN THE BOOKLET UNTIL TOLD TO DO SO

* Source: *Project Talent*
University of Pittsburgh, 1960

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ABSTRACT REASONING

Directions: Each item in this test consists of a set of figures arranged in a pattern, formed according to certain rules. Look at the pattern in the sample item.

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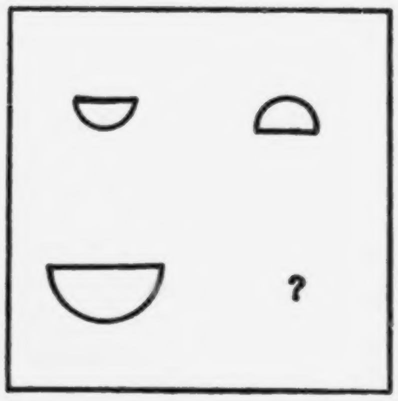

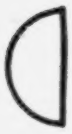
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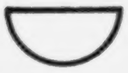
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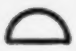
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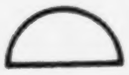
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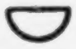
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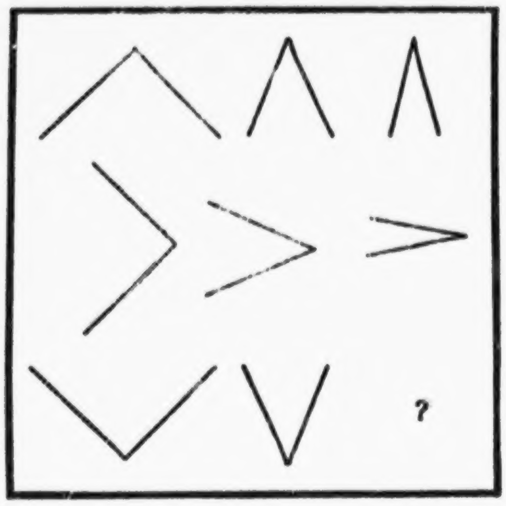
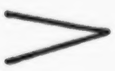
The question mark in the lower right corner of the box shows where a figure is missing in the pattern. You are to decide which of the five figures (A, B, C, D, or E) under the pattern belongs where the question mark is. In the case of the sample item above, the figure at the left in the bottom row is larger than the one above it but otherwise the same. In the top row the figure at the right is the same as the one to the left of it except that it has been turned upside down. Following these rules, the missing figure should be larger than the one above it, and exactly the same size as the one to the left of it, but upside down. Therefore D is the answer to this problem. You can see that answer D has been blackened in the sample item on your answer card.

In each problem you are to decide what figure belongs where the question mark is in the pattern. To do this you have to figure out what the rule is according to which the drawings change, going from row to row, and what the rule is for the changes going from column to column. The items have different kinds of patterns and different rules by which the drawings change.

Stop here!

1

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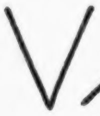
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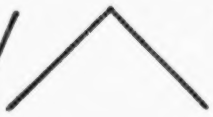
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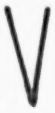
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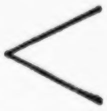
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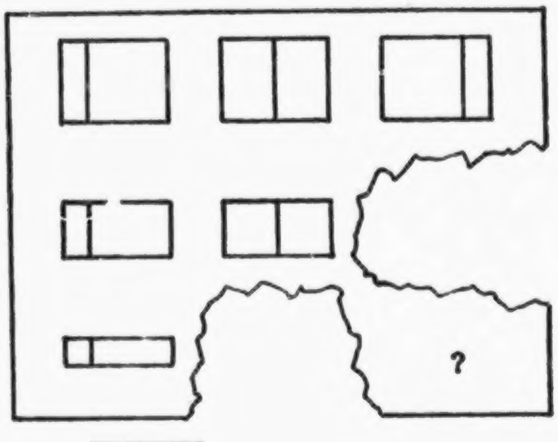

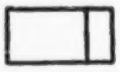
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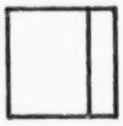
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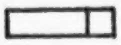
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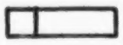
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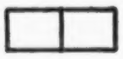
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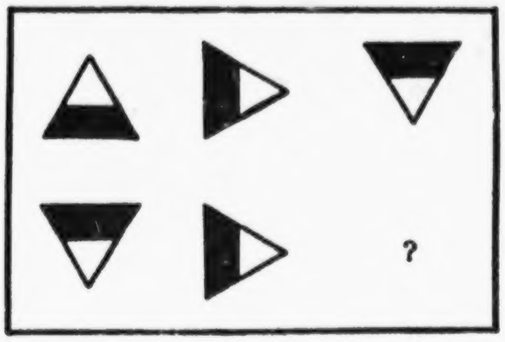

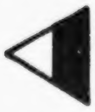
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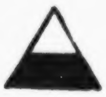
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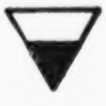
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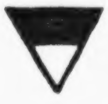
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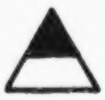
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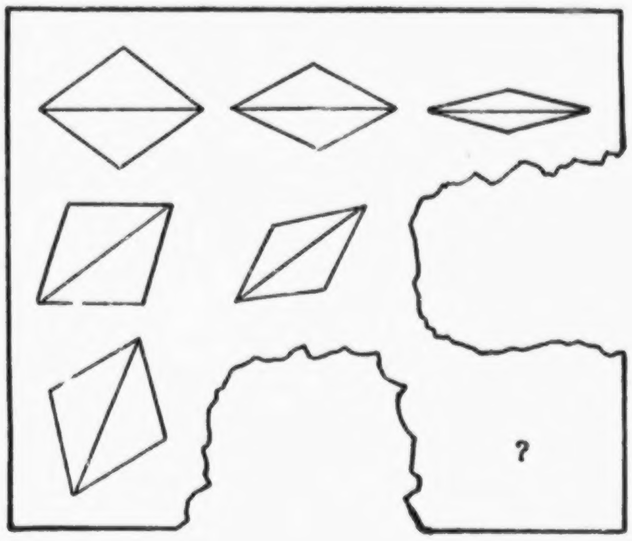

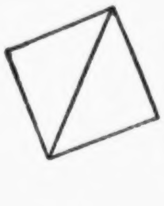
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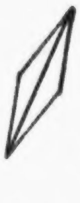
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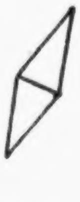
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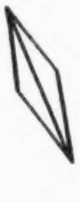
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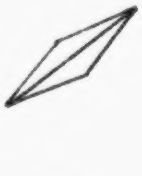
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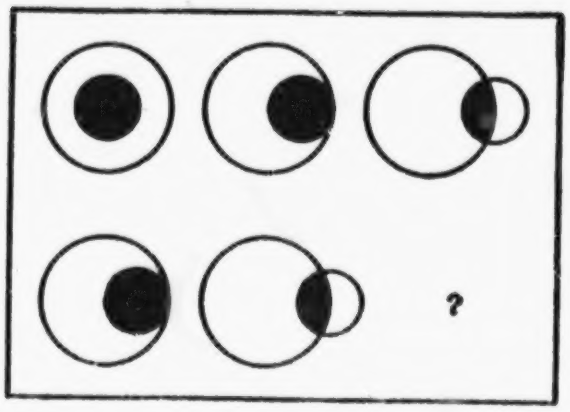

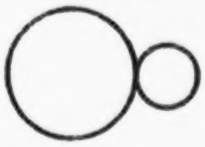
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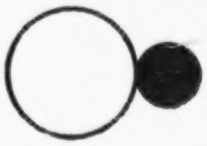
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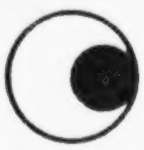
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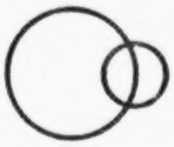
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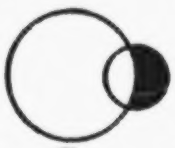
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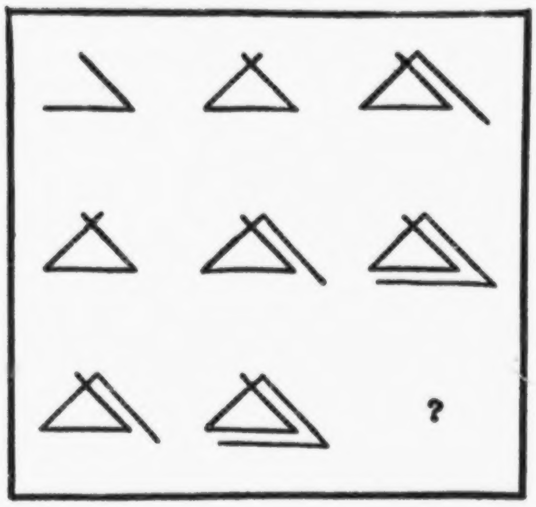

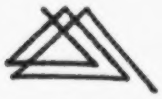
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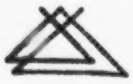
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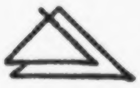
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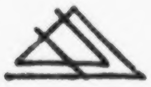
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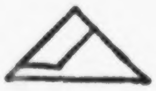
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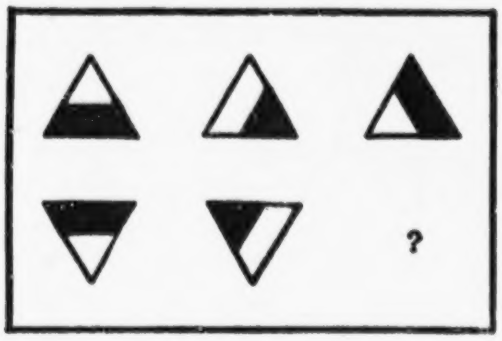

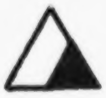
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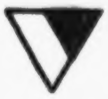
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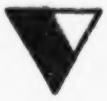
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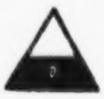
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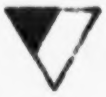
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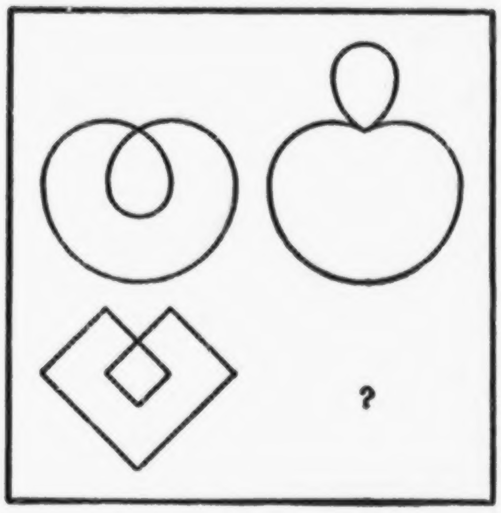

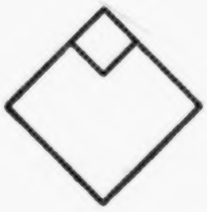
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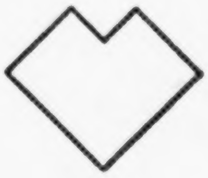
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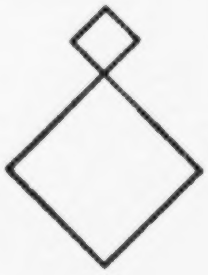
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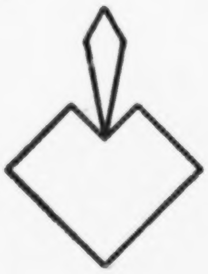
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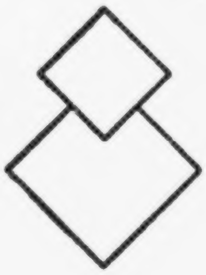
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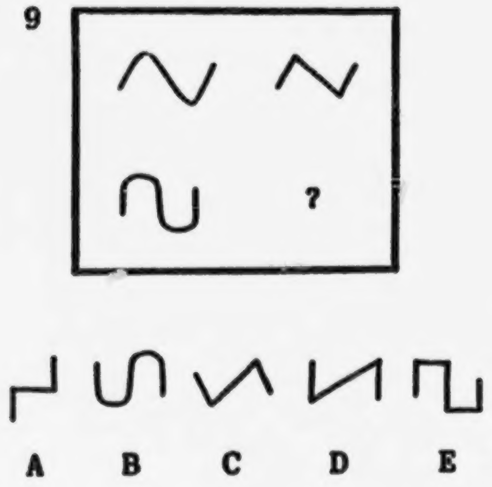

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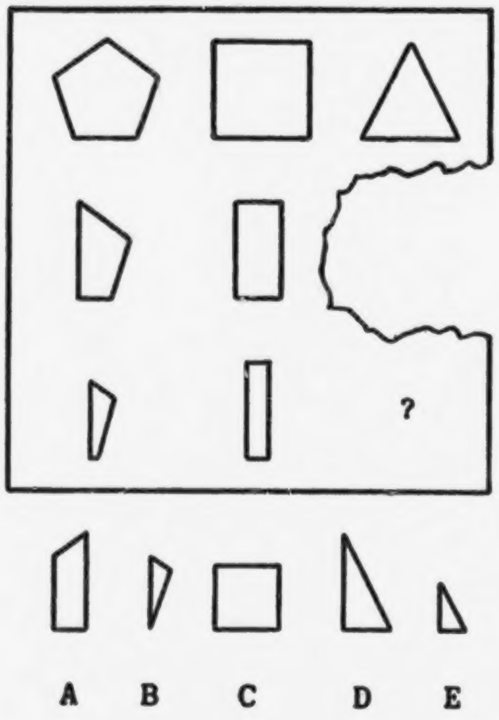

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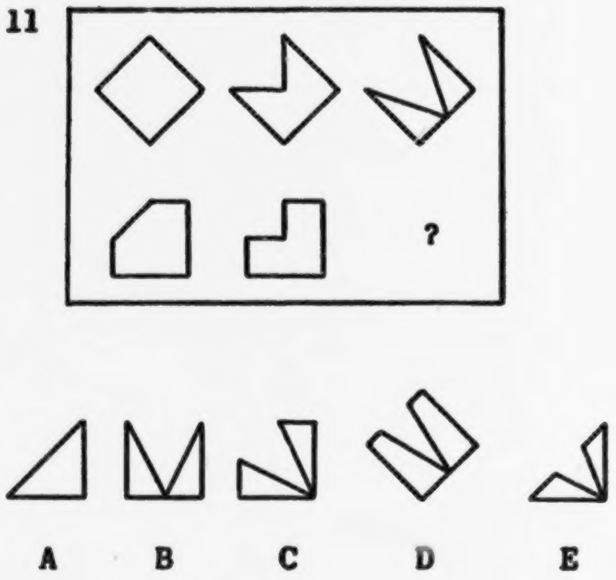

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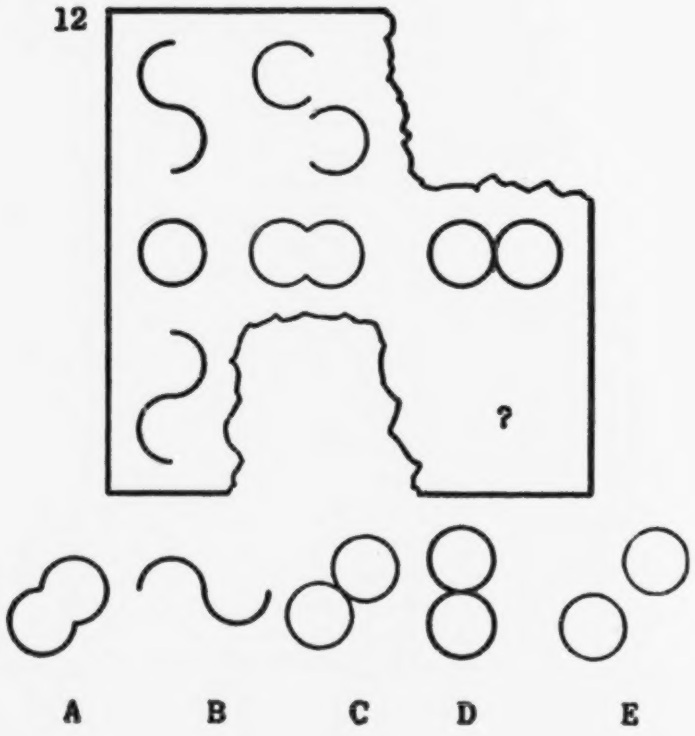

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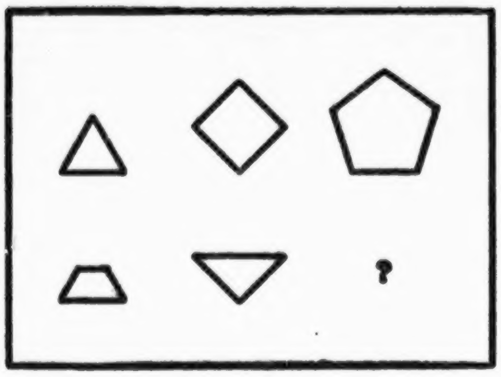

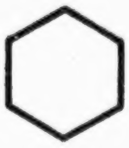
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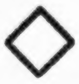
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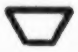
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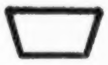
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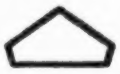
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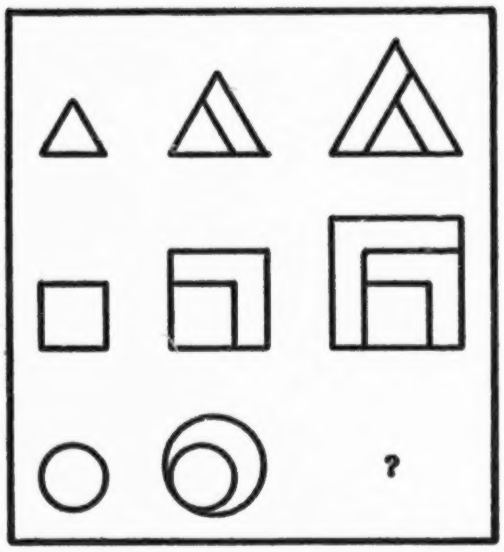

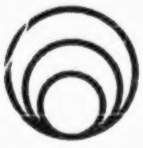
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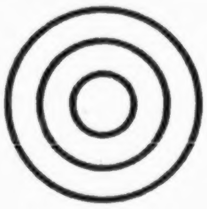
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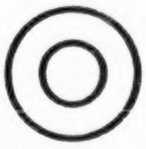
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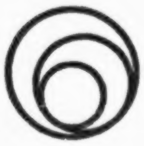
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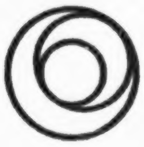
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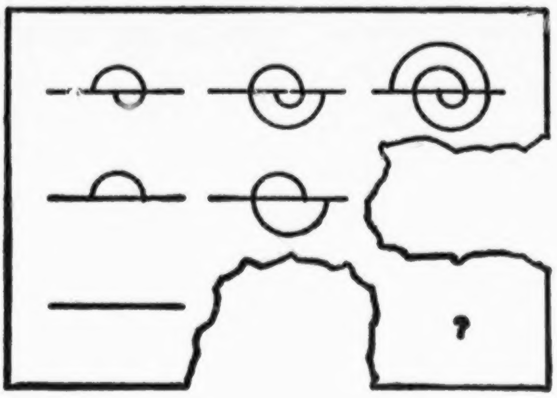

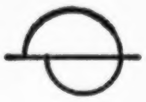
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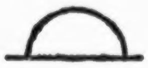
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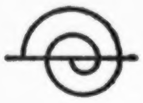
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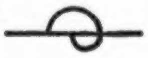
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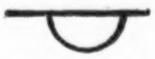
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Stop here. Go back and check your work on this test (pages 3-7).

Wait for further directions.
Do not turn the page.

MATHEMATICS

1. The number *thirty thousand four hundred twelve* equals
    - A. 3000040012
    - B. 30000412
    - C. 34112
    - D. 30412
    - E. 3412

2. $3.4 + .20 =$
    - A. .360
    - B. .54
    - C. 3.42
    - D. 3.6
    - E. 5.4

3. $1/3 + 1/4 =$
    - A. 1/7
    - B. 1/12
    - C. 7/12
    - D. 12/7
    - E. none of these

4. $\frac{1/5 + 2/5}{3/5} =$
    - A. 1
    - B. 3/5
    - C. 5/3
    - D. 9/25
    - E. none of these

Go on to the next page.

5. If $\frac{4}{x} = \frac{2}{3}$ the value of x is

A. $1\frac{1}{3}$
B. $2\frac{2}{3}$
C. 6
D. 24
E. none of these

6. 11/7 equals

A. $1\frac{4}{11}$
B. $1\frac{4}{7}$
C. $1\frac{7}{4}$
D. $1\frac{7}{18}$
E. none of these

7. If $y = 2x + 1$, what is the value of y when $x = -3$?

A. -1
B. 2
C. 7
D. -7
E. -5

8. If *s* is the side of a certain square, the side of a square whose area is four times as large equals

A. $s + 2$
B. 2s
C. $s + 4$
D. 4s
E. s^2

9. Which of these equations should be solved by dividing 79 by 42?

A. $42x = 79$
B. $79x = 42$
C. $\frac{x}{79} = 42$
D. $\frac{x - 79}{42} = 1$
E. $\frac{x - 42}{79} = 1$

10. $4x^2 - 3x$ equals

A. x
B. $x(4x - 3)$
C. $(4x^2 - 3)x$
D. $4x(x - 3)$
E. none of these

11. If $x + y = 6$ and $3x - y = 2$, the value of y is

A. 6
B. 2
C. 3
D. 4
E. none of these

12. The difference between four times a number and two times the number is three more than the number. What is the number?

A. 1
B. $\frac{3}{2}$
C. -1
D. 3
E. 6

13. How many values of x will satisfy the equation $5(x - 4)(2x - 6) = 0$?

A. None
B. One
C. Two
D. Three
E. Four

14. v^6 equals

A. $2v^3$
B. $(2v)^3$
C. $v + v + v + v$
D. $4\sqrt{v}$
E. none of these

Go on to the next page.

15 . What is the first step in solving the following equation?

$$\frac{25x - 49}{11} = 9x^2 + 4$$

A. Addition
B. Subtraction
C. Multiplication
D. Division
E. Computing a square root

16 . *If n* and *d* are two whole numbers and if $\frac{n}{d}$ is negative, it can be concluded that

A. both *n* and *d* are negative.
B. neither *n* nor *d* is negative.
C. *n* is negative and *d* is positive.
D. *d* is negative and *n* is positive.
E. either *d* or *n* is negative, and the other is positive.

17 . In the square root of 47428.65337 how many digits are there to the left of the decimal point? (Hint: Do *not* compute the square root.)

A. 2
B. 3
C. 4
D. 5
E. 10

18 . Suppose the sum of two two-digit numbers is a three-digit number. What is the first digit of the sum?

A. 1
B. 2
C. 4
D. More information is needed to answer the question
E. None of these

19 . Which of these numbers is closest to the product of 5,996,748.95 and 7,019.1021? (Hint: Do *not* actually do the multiplication.)

A. 4,000,000
B. 35,000,000
C. 41,000,000
D. 35,000,000,000
E. 42,000,000,000

20 . $\frac{.8}{.40} =$

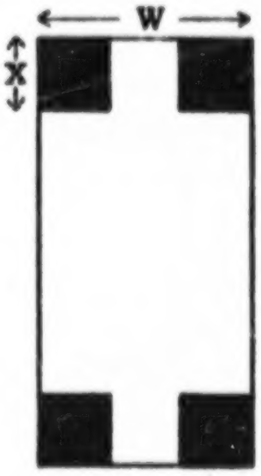
A. .002
B. .02
C. .2
D. 2
E. 20

21 . Dick's age is two years less than twice George's age. The sum of their ages is 46. If George's age is x, which of the following equations is correct?

A. $3x - 2 = 46$
B. $3x + 2 = 46$
C. $x - 2 = 46$
D. $2x - 2 = 46$
E. $2x + 2 = 46$

22 . $x^2 + dx + 1 = 0$. If $x = -1$, what does d equal?

A. 1
B. 2
C. −1
D. 7
E. 0



23 . The width (w) of a rectangular piece of tin is half its length. If a square with a side equal to x is cut from each corner, as shown in the diagram above, what is the area of the tin remaining?

A. $2w^2 - 4x^2$
B. $w^2 - 2x^2$
C. $2w^2 - 4x$
D. $2w(w-2x)$
E. None of these

24 . If $x = \frac{4m}{2b + c}$ what does b equal?

A. $\frac{2}{cx - 4m}$
B. $\frac{4m}{2x + c}$
C. $\frac{4m - cx}{2x}$
D. $\frac{2m}{x} - cx$
E. $\frac{2x}{cx - 4m}$

Stop here! Go back and check your work.

APPENDIX B

TABLE B-1

ITEMS AND ITEM STATISTICS FOR PRESS SCALES BASED ON EITHER STUDENTS' OR TEACHERS' PERCEPTIONS OF SCHOOL ENVIRONMENT

Variable 1: Student Perception of Faculty Press Toward Scientism[a]

Scale Reliability[c] = .26

Spearman-Brown Prophecy Reliability[d] = .47

		$\%^b$	r^e
224.	Science labs here have poor equipment. (F)	78.6	.61
235.	Science teachers here expect and get more work out of students than do other teachers. (T)	45.1	.62
243.	The guidance counselors here most often recommend majoring in science in college. (T)	18.8	.70
251.	The teachers here encourage the students to take as many science courses as possible. (T)	27.6	.71

Variable 2: Student Perception of Student Press Toward Scientism[a]

Scale Reliability[c] = .53

Spearman-Brown Prophecy Reliability[d] = .74

		$\%^b$	r^e
229.	Many students here want to take more courses in science than are required. (T)	44.4	.62
237.	Many students here are planning careers in science. (T)	56.3	.71
245.	There is not much interest in science clubs among students here. (F)	46.0	.51
253.	Students here tend to like science courses more than other courses. (T)	24.5	.68

Variable 3: Student Perception of Student Press Toward Social Conformity[a]

Scale Reliability[c] = .34

Spearman-Brown Prophecy Reliability[d] = .72

		$\%^b$	r^e
214.	Students here value individualism; that is, being different from others. (F)	60.6	.92
257.	Most students here dress and act pretty much alike. (T)	69.0	.92

Variable 4: Student Perception of Student Press Toward Estheticism

Scale Reliability[c] = .42

Spearman-Brown Prophecy Reliability[d] = .64

		$\%^b$	r^e
220.	Classes in history, literature, and art are among the best liked here. (T)	37.7	.41
232.	Very few students here ever listen to classical music. (F)	28.4	.56
240.	A student who is interested in art or music is likely to be regarded as a little odd by other students. (F)	64.3	.66
248.	Very few students here would be interested in a field trip to an art museum. (F)	52.8	.67

TABLE B-1 (continued)

Variable 5: Student Perception of Faculty Press Toward Humanism[a]

Scale Reliability[c] = .47

Spearman-Brown Prophecy Reliability[d] = .64

		%[b]	r[e]
219.	This school doesn't offer many opportunities for students to get to know important works of art, music and drama. (F)	74.2	.68
231.	Students here are not encouraged to take courses in such areas as art, music, or dramatics. (F)	59.5	.55
239.	Teachers here go out of their way to try to liberate the student from his prejudices and biases. (T)	48.0	.51
247.	Student discussions on national and international news are encouraged in class. (T)	61.9	.63
255.	Teachers frequently urge students to consider the influence of history on current events. (T)	70.2	.59

Variable 6: Student Perception of Faculty Press Toward Vocationalism[a]

		%[b]	r[e]
209.	Many teachers here stress the practical uses of their subjects in helping students to get a good job. (T)	59.0	.69
221.	Many teachers here are more interested in practical applications of what they are teaching than in the underlying theory. (T)	52.7	.85

Variable 7: Student Perception of Faculty Press Toward Enthusiasm[a]

Scale Reliability[c] = .32

Spearman-Brown Prophecy Reliability[d] = .61

		%[b]	r[e]
215.	It is difficult to take clear and usable notes in most classes here. (F)	72.4	.74
227.	Teachers clearly explain what students can get out of their classes and why it is important. (T)	64.2	.62
213.	Many classes here are boring. (F)	39.0	.55

Variable 8: Student Perception of Faculty Press Toward Supportiveness[a]

Scale Reliability[c] = .55

Spearman-Brown Prophecy Reliability[d] = .75

		%[b]	r[e]
218.	Students having trouble with their courses find it difficult to get help from teachers. (F)	80.8	.76
230.	Teachers here often make cutting or sarcastic remarks to students in class. (F)	52.5	.65
238.	Outside of class most teachers find time to chat with students. (T)	66.1	.64
246.	The teachers here really talk with the students, not just at them. (T)	67.7	.78

TABLE B-1 (continued)

Variable 9: Student Perception of Faculty Press Toward Independence[a]

Scale Reliability[c] = .37

Spearman-Brown Prophecy Reliability[d] = .59

		%[b]	r[e]
211.	If a student thinks out a report carefully teachers will give him a good grade, even if they don't agree with him. (T)	73.7	.72
234.	At this school students are seldom encouraged to undertake independent projects. (F)	66.6	.73
242.	Some of the teachers treat questions in class as if the students were criticising them personally. (F)	61.1	.71
250.	In this school teachers do not adjust assignments and projects to the individual student's interests. (F)	33.4	.66

Variable 10: Student Perception of Student Press Toward Intellectualism[a]

Scale Reliability[c] = .33

Spearman-Brown Prophecy Reliability[d] = .62

		%[b]	r[e]
210.	Students seldom get together on their own time to talk about things they have learned in class. (F)	37.1	.71
222.	There is a lot of interest here in learning for its own sake, rather than just for grades or for graduation credits. (T)	50.6	.62
233.	Most students here don't do much reading. (T)	61.2	.72

Variable 11: Student Perception of Student Press Toward Competition-Achievement[a]

Scale Reliability[c] = .42

Spearman-Brown Prophecy Reliability[d] = .64

		%[b]	r[e]
249.	There is a lot of competition for grades here. (T)	70.8	.89
256.	Students here are very much aware of the competition to get into college. (T)	89.6	.90
226.	Few students try hard to get on the honor roll. (F)	67.7	.91
260.	A lot of students here are content just to get by. (F)	15.2	.76

Variable 12: Student Perception of Faculty Press Toward Intellectualism[a]

Scale Reliability[c] = .35

Spearman-Brown Prophecy Reliability[d] = .64

		%[b]	r[e]
244.	Teachers here encourage students to value knowledge for its own sake, rather than just for grades. (T)	79.4	.87
216.	Clear and careful thinking are most important in getting a good grade on reports, papers, discussions, and tests. (T)	92.8	.87
228.	Teachers do nothing more than repeat what's in the textbook in many classes here. (F)	53.8	.87

TABLE B-1 (continued)

Variable 13: Student Perception of Faculty Press Toward Competition-Achievement[a]

Scale Reliability[c] = .29

Spearman-Brown Prophecy Reliability[d] = .51

		%[b]	r[e]
212.	It takes more than memorizing what's in the textbook to get an "A" in courses here. (T)	80.6	.75
236.	There is not much emphasis by teachers here on preparing for college. (F)	81.9	.71
252.	Teachers here are really skillful at getting students to work to the limit of their ability. (T)	42.4	.64
217.	Personality, pull, and bluff get students through some courses here. (F)	46.2	.62

Variable 14: Faculty Perception of Faculty Press Toward Scientism[a]

Scale Reliability[c] = .22

Spearman-Brown Prophecy Reliability[d] = .41

		%[b]	r[e]
160.	The school library has a poor collection of science books and magazines. (F)	80.8	.58
123.	Science labs here have poor equipment. (F)	79.9	.58
142.	The guidance counselors here most often recommend majoring in science in college. (T)	11.5	.78
150.	The teachers here encourage the students to take as many science courses as possible. (T)	49.6	.87

Variable 15: Faculty Perception of Student Press Toward Scientism[a]

Scale Reliability[c] = .57

Spearman-Brown Prophecy Reliability[d] = .77

		%[b]	r[e]
128.	Many students here want to take more courses in science than are required. (T)	60.1	.72
136.	Many students here are planning careers in science. (T)	70.1	.80
144.	There is not much interest in science clubs among students here. (F)	61.1	.68
152.	Students here tend to like science courses more than other courses. (T)	30.3	.75

Variable 16: Faculty Perception of Student Press Toward Social Conformity[a]

Scale Reliability[c] = .31

Spearman-Brown Prophecy Reliability[d] = .77

		%[b]	r[e]
113.	Students here value individualism; that is, being different from others. (F)	60.1	1.00
156.	Most students here dress and act pretty much alike. (T)	82.5	1.00

TABLE B-1 (continued)

Variable 17: Faculty Perception of Student Press Toward Estheticism[a]

Scale Reliability[c] = .52

Spearman-Brown Prophecy Reliability[d] = .73

		%[b]	r[e]
119.	Classes in history, literature, and art are among the best liked here. (T)	49.5	.51
131.	Very few students here ever listen to classical music. (F)	59.8	.72
139.	A student who is interested in art or music is likely to be regarded as a little odd by other students. (F)	84.2	.91
147.	Very few students here would be interested in a field trip to an art museum. (F)	74.1	.83

Variable 18: Faculty Perception of Faculty Press Toward Humanism[a]

Scale Reliability[c] = .48

Spearman-Brown Prophecy Reliability[d] = .65

		%[b]	r[e]
118.	This school doesn't offer many opportunities for students to get to know important works of art, music and drama. (F)	75.0	.99
130.	Students here are not encouraged to take courses in such areas as art, music, or dramatics. (F)	79.4	.99
138.	Teachers here go out of their way to try to liberate the student from his prejudices and biases. (T)	74.5	.99
146.	Student discussions on national and international news are encouraged in class. (T)	93.0	.99
154.	Teachers frequently urge students to consider the influence of history on current events. (T)	88.3	.99

Variable 19: Faculty Perception of Faculty Press Toward Vocationalism[a]

Scale Reliability[c] = .34

Spearman-Brown Prophecy Reliability[d] = .72

		%[b]	r[e]
120.	Many teachers here are more interested in practical applications of what they are teaching than in the underlying theory. (T)	38.8	1.00
108.	Many teachers here stress the practical uses of their subjects in helping students to get a good job. (T)	60.7	.63

Variable 20: Faculty Perception of Faculty Press Toward Enthusiasm[a]

Single Item--Reliability Cannot Be Computed

		%[b]	r[e]
112.	Many students here seem bored in class. (F)	60.3	--

TABLE B-1 (continued)

Variable 21: Faculty Perception of Faculty Press Toward Supportiveness[a]

Scale Reliability[c] = .45

Spearman-Brown Prophecy Reliability[d] = .73

		%[b]	r[e]
117.	Students having trouble with their courses find it difficult to get help from teachers. (F)	92.5	1.00
137.	Outside of class most teachers find time to chat with students. (T)	78.1	1.00
145.	The teachers here really talk with the students, not just at them. (T)	88.4	1.00

Variable 22: Faculty Perception of Faculty Press Toward Independence[a]

Scale Reliability[c] = .32

Spearman-Brown Prophecy Reliability[d] = .54

		%[b]	r[e]
110.	If a student thinks out a report carefully teachers will give him a good grade, even if they don't agree with him. (T)	94.8	1.00
133.	At this school students are seldom encouraged to undertake independent projects. (F)	84.7	1.00
141.	Some of the teachers treat questions in class as if the students were criticising them personally. (F)	79.7	1.00
149.	In this school teachers do not adjust assignments and projects to the individual student's interests. (F)	72.6	1.00

Variable 23: Faculty Perception of Faculty Press Toward Academic Autonomy[a]

Scale Reliability[c] = .49

Spearman-Brown Prophecy Reliability[d] = .83

		%[b]	r[e]
114.	Teachers here feel free to express themselves, even if their views are contrary to those of the administration. (T)	71.1	1.00
165.	The administration is usually willing to comply with teachers' requests. (T)	87.6	1.00

Variable 24: Faculty Perception of Student Press Toward Intellectualism[a]

Scale Reliability[c] = .44

Spearman-Brown Prophecy Reliability[d] = .72

		%[b]	r[e]
109.	Students seldom get together on their own time to talk about things they have learned in class. (F)	55.4	.70
121.	There is a lot of interest among students here in learning for its own sake, rather than just for grades or for graduation credits. (T)	33.7	.66
132.	Most students here don't do much reading. (F)	75.7	.86

TABLE B-1 (continued)

Variable 25: Faculty Perception of Student Press Toward Competition-Achievement[a]

Scale Reliability[c] = .52

Spearman-Brown Prophecy Reliability[d] = .73

		%[b]	r[e]
148.	There is a lot of competition for grades here. (T)	81.6	.88
155.	Students here are very much aware of the competition to get into college. (T)	93.8	.85
125.	Few students try hard to get on the honor roll. (F)	79.0	.95
159.	A lot of students here are content just to get by. (F)	26.9	.36

Variable 26: Faculty Perception of Faculty Press Toward Intellectualism[a]

Scale Reliability[c] = .40

Spearman-Brown Prophecy Reliability[d] = .69

		%[b]	r[e]
115.	Clear and careful thinking are most important in getting a good grade on reports, papers, discussions, and tests. (T)	91.4	1.00
127.	Teachers do nothing more than repeat what's in the textbook in some classes here. (F)	62.0	1.00
143.	Teachers here encourage students to value knowledge for its own sake, rather than just for grades. (T)	89.4	1.00

Variable 27: Faculty Perception of Faculty Press Toward Competition-Achievement[a]

Scale Reliability[c] = .31

Spearman-Brown Prophecy Reliability[d] = .60

		%[b]	r[e]
135.	There is not much emphasis by teachers here on preparing for college. (F)	93.5	.68
151.	Teachers here are really skillful at getting students to work to the limit of their ability. (T)	54.6	.76
116.	Personality, pull, and bluff get students through some courses here. (F)	64.4	.68

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[a] Numbers to left of items refer to the identification of the items in the student or teacher questionnaire.

[b] Percentages are those of a random 10% sample (N = 2,053) of students in each school _or_ 100% sample of teachers (N = 1,029) answering each item in the keyed direction shown in parenthesis to right of item.

[c] Scale reliability estimates were obtained from the Kuder-Richardson Formula 20.

[d] Spearman-Brown Prophecy reliabilities are for scales of 10 items, making the assumption that the nature of the scales would not be changed by increasing their length to 10 items.

[e] The coefficients represent the item-total score correlation which is Phi as a proportion of its maximum value.

TABLE B-2

INTERCORRELATIONS AMONG THIRTY-NINE CLIMATE VARIABLES*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1	--	70	$\underline{17}$	32	66	$\underline{17}$	27	45	58	37	20	39	37	81	70	$\underline{35}$	15	22	$\underline{11}$	$\underline{15}$	07	66	$\underline{05}$	44	18	17	$\underline{02}$	$\underline{03}$	$\underline{06}$	$\underline{06}$	17	$\underline{33}$	$\underline{01}$	$\underline{06}$	31	40	09	23	15
2		--	$\underline{30}$	29	36	$\underline{32}$	36	37	59	64	59	44	56	57	92	$\underline{43}$	10	07	$\underline{33}$	25	$\underline{04}$	53	$\underline{03}$	62	46	51	23	49	42	39	33	$\underline{27}$	$\underline{00}$	36	06	31	$\underline{06}$	56	38
3			--	$\underline{63}$	$\underline{40}$	22	$\underline{53}$	$\underline{45}$	$\underline{57}$	$\underline{77}$	$\underline{33}$	$\underline{65}$	$\underline{59}$	$\underline{12}$	$\underline{35}$	86	$\underline{41}$	$\underline{29}$	59	$\underline{32}$	09	$\underline{36}$	$\underline{21}$	$\underline{63}$	$\underline{21}$	$\underline{57}$	$\underline{44}$	$\underline{25}$	$\underline{26}$	$\underline{03}$	$\underline{44}$	$\underline{05}$	$\underline{35}$	$\underline{06}$	44	$\underline{57}$	68	$\underline{27}$	$\underline{10}$
4				--	75	$\underline{07}$	63	59	55	67	38	62	53	20	34	$\underline{53}$	58	63	$\underline{46}$	26	18	31	44	68	37	40	38	24	34	19	33	$\underline{05}$	10	17	$\underline{24}$	45	$\underline{29}$	32	36
5					--	$\underline{32}$	46	63	65	39	26	51	38	46	42	$\underline{41}$	64	73	$\underline{40}$	08	25	53	42	59	34	28	26	02	08	$\underline{14}$	41	09	$\underline{11}$	$\underline{03}$	$\underline{07}$	45	$\underline{23}$	23	34
6						--	04	$\underline{06}$	$\underline{35}$	$\underline{20}$	$\underline{44}$	$\underline{05}$	$\underline{15}$	$\underline{29}$	$\underline{45}$	31	$\underline{64}$	$\underline{45}$	74	$\underline{36}$	02	$\underline{49}$	$\underline{42}$	$\underline{52}$	$\underline{60}$	$\underline{52}$	$\underline{43}$	$\underline{43}$	$\underline{34}$	08	$\underline{47}$	$\underline{59}$	55	$\underline{30}$	21	01	35	$\underline{65}$	$\underline{39}$
7							--	86	78	71	44	93	80	11	33	$\underline{33}$	18	20	$\underline{19}$	47	20	40	15	47	17	58	43	27	21	22	30	$\underline{24}$	20	29	$\underline{07}$	31	$\underline{17}$	25	29
8								--	80	57	38	87	68	27	35	$\underline{42}$	24	30	$\underline{19}$	33	46	48	23	45	17	50	36	19	13	02	16	$\underline{30}$	23	17	$\underline{07}$	45	$\underline{14}$	19	35
9									--	74	45	87	80	43	58	$\underline{58}$	36	30	$\underline{33}$	32	09	76	14	61	29	62	39	21	12	$\underline{07}$	52	$\underline{03}$	03	17	02	38	$\underline{33}$	33	23
10										--	67	77	83	28	65	$\underline{71}$	29	23	$\underline{48}$	52	$\underline{04}$	53	18	81	47	74	55	47	43	41	40	$\underline{12}$	14	43	$\underline{22}$	35	$\underline{31}$	48	34
11											--	39	59	16	70	$\underline{34}$	47	41	$\underline{54}$	81	30	46	45	80	88	87	82	82	75	62	42	06	$\underline{30}$	86	$\underline{46}$	08	$\underline{07}$	61	71
12												--	87	23	40	$\underline{51}$	20	15	$\underline{25}$	36	14	55	05	50	11	62	37	26	17	09	34	$\underline{28}$	30	17	$\underline{01}$	39	$\underline{25}$	24	21
13													--	20	55	$\underline{50}$	25	07	$\underline{33}$	49	12	69	$\underline{03}$	62	34	75	45	50	43	33	45	$\underline{25}$	03	42	00	21	$\underline{19}$	41	31
14														--	60	$\underline{30}$	19	23	$\underline{19}$	$\underline{02}$	$\underline{08}$	56	$\underline{08}$	41	13	20	11	01	$\underline{03}$	$\underline{15}$	05	$\underline{27}$	$\underline{04}$	$\underline{04}$	16	42	02	35	27
15															--	$\underline{53}$	34	29	$\underline{44}$	27	03	67	17	74	65	65	36	55	48	37	38	$\underline{19}$	$\underline{11}$	49	$\underline{07}$	36	$\underline{07}$	61	40
16																--	$\underline{45}$	$\underline{35}$	55	$\underline{17}$	$\underline{02}$	$\underline{51}$	$\underline{25}$	$\underline{67}$	$\underline{34}$	$\underline{55}$	$\underline{38}$	$\underline{23}$	$\underline{26}$	07	$\underline{36}$	02	$\underline{35}$	$\underline{05}$	37	$\underline{63}$	61	$\underline{31}$	$\underline{11}$
17																	--	88	$\underline{69}$	40	29	48	65	67	68	53	58	42	49	$\underline{04}$	62	47	$\underline{39}$	31	$\underline{49}$	31	$\underline{48}$	49	48
18																		--	$\underline{55}$	32	31	31	80	64	63	38	57	20	29	$\underline{05}$	37	37	$\underline{29}$	23	$\underline{47}$	35	$\underline{28}$	29	46
19																			--	$\underline{49}$	05	$\underline{31}$	$\underline{53}$	$\underline{76}$	$\underline{64}$	$\underline{65}$	$\underline{61}$	$\underline{57}$	$\underline{50}$	$\underline{12}$	$\underline{43}$	$\underline{41}$	22	$\underline{25}$	37	$\underline{16}$	50	$\underline{76}$	$\underline{51}$
20																				--	24	18	33	59	63	77	89	71	66	51	38	20	$\underline{21}$	72	$\underline{57}$	$\underline{03}$	$\underline{22}$	53	76
21																					--	17	42	11	28	18	21	29	35	05	05	$\underline{25}$	$\underline{10}$	32	$\underline{27}$	28	03	02	28
22																						--	13	58	43	62	34	27	20	$\underline{10}$	45	$\underline{08}$	$\underline{30}$	29	09	31	$\underline{13}$	33	15
23																							--	54	64	37	54	25	23	$\underline{00}$	15	37	$\underline{35}$	30	$\underline{45}$	20	$\underline{19}$	25	28
24																								--	81	79	73	59	57	$\underline{35}$	47	13	$\underline{21}$	50	$\underline{40}$	37	$\underline{35}$	68	61
25																									--	70	72	71	71	50	41	30	$\underline{51}$	76	$\underline{43}$	02	$\underline{09}$	67	67
26																										--	84	77	65	37	48	03	$\underline{12}$	68	$\underline{44}$	23	$\underline{30}$	60	57
27																											--	59	54	30	33	21	$\underline{18}$	64	$\underline{60}$	09	$\underline{22}$	44	68
28																												--	94	66	44	00	$\underline{21}$	76	$\underline{44}$	07	$\underline{20}$	73	66
29																													--	69	43	$\underline{01}$	$\underline{19}$	75	$\underline{50}$	13	$\underline{21}$	67	67
30																														--	04	$\underline{17}$	$\underline{09}$	74	$\underline{24}$	$\underline{17}$	27	41	54
31																															--	47	$\underline{23}$	21	$\underline{33}$	21	$\underline{65}$	38	21
32																																--	$\underline{49}$	01	$\underline{29}$	$\underline{32}$	$\underline{41}$	18	10
33																																	--	$\underline{37}$	$\underline{08}$	39	$\underline{16}$	$\underline{33}$	$\underline{22}$
34																																		--	$\underline{41}$	$\underline{11}$	19	46	61
35																																			--	$\underline{44}$	54	$\underline{11}$	$\underline{41}$
36																																				--	$\underline{54}$	02	00
37																																					--	$\underline{24}$	$\underline{02}$
38																																						--	66
39																																							--

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*Decimal points have been omitted, and negative signs are indicated by underscoring.

TABLE B-3

UNROTATED FACTOR MATRIX AND COMMUNALITIES[a]

Variable Numbers and Descriptions	Factors								
	I	II	III	IV	V	VI	VII	VIII	h^2
Press Scales from Student Questionnaire:									
1. F.P. for Scientism	-.390	-.596	-.077	-.612	.115	.183	.003	.036	.936
2. S.P. for Scientism	-.632	-.272	-.380	-.383	-.244	.228	.003	.079	.883
3. S.P. for Social Conformity	.638	.369	-.262	-.430	.342	-.072	.123	.058	.937
4. S.P. for Estheticism	-.662	-.297	.190	.198	.272	.044	-.366	.336	.924
5. F.P. for Humanism	-.588	-.395	.392	-.244	.379	-.038	-.139	.252	.942
6. F.P. for Vocationalism	.556	-.324	-.371	.435	.262	.160	-.114	.131	.866
7. F.P. for Enthusiasm	-.613	-.447	-.234	.342	.207	-.365	-.083	.075	.935
8. F.P. for Supportiveness	-.595	-.532	-.106	.188	.412	-.186	.048	-.022	.890
9. F.P. for Independence	-.715	-.554	.019	-.072	-.012	-.353	.091	-.034	.958
10. S.P. for Intellectualism	-.808	-.312	-.207	.181	-.206	-.053	-.210	-.051	.918
11. S.P. for Competition-Achievement	-.860	.320	-.304	-.011	.064	.002	.034	-.130	.958
12. F.P. for Intellectualism	-.637	-.600	-.177	.274	.057	-.312	-.013	.015	.974
13. F.P. for Competition-Achievement	-.732	-.370	-.355	.131	-.106	-.329	.089	.065	.947
Press Scales from Teacher Questionnaire:									
14. F.P. for Scientism	-.347	-.426	-.007	-.604	-.000	.301	-.046	-.175	.791
15. S.P. for Scientism	-.742	-.168	-.251	-.428	-.165	.262	.053	-.037	.926
16. S.P. for Social Conformity	.640	.391	-.286	-.183	.293	-.278	.002	.185	.876
17. S.P. for Estheticism	-.700	.232	.564	-.089	.155	.003	.079	.141	.920
18. F.P. for Humanism	-.597	.163	.569	-.097	.432	.106	-.157	.020	.939
19. F.P. for Vocationalism	.726	-.233	-.348	.058	.271	-.035	.253	.023	.845
20. F.P. for Enthusiasm	-.699	.427	-.213	.298	.026	-.188	-.009	-.157	.866
21. F.P. for Supportiveness	-.254	.095	-.041	.149	.702	.140	.508	.081	.875
22. F.P. for Independence	-.644	-.355	.018	-.418	-.013	-.203	.345	-.189	.912
23. F.P. for Academic Autonomy	-.478	.330	.465	.039	.450	.042	-.133	-.175	.808
24. S.P. for Intellectualism	-.940	.008	.081	-.097	-.031	.110	-.209	-.057	.959
25. S.P. for Competition-Achievement	-.788	.485	-.013	-.219	.102	.073	-.036	-.046	.923
26. F.P. for Intellectualism	-.899	.095	-.155	.123	-.115	-.119	.111	-.258	.963
27. F.P. for Competition-Achievement	-.769	.329	.013	.210	.111	-.098	-.093	-.387	.924

TABLE B-3 (continued)

Variable Numbers and Descriptions	Factors								
	I	II	III	IV	V	VI	VII	VIII	h^2
Single Items from Student Questionnaire:									
28. Q. 142 Importance to Students to Achieve High Grades	-.712	.441	-.346	.090	-.156	.116	.196	.161	.935
29. Q. 144 Satisfying to Students to Work Hard on Studies	-.678	.460	-.281	.142	-.076	.244	.171	.300	.955
30. Q. 146 Extent to Which Students Admire Brightness	-.366	.396	-.675	.137	-.034	.166	-.227	.250	.908
31. Q. 263 Degree of Social Cohesion Among Students	-.584	.040	.304	.007	-.304	-.242	.357	.390	.866
32. Q. 157 Importance of Family Background for High Social Status	-.091	.515	.630	-.075	-.242	-.390	-.096	.057	.899
33. Q. 158 Importance of Being a Leader in Activities for High Social Status	.168	-.547	-.120	.567	-.142	.365	-.122	-.063	.835
34. Q. 159 Importance of Car or Clothes for High Social Status	-.603	.509	-.479	.031	.133	-.021	.118	-.099	.894
35. Q. 160 Importance of High Grades for High Social Status	.438	-.396	-.285	-.531	-.017	-.360	-.146	.130	.880
36. Q. 161 Importance of Being an Athlete or Cheerleader for High Social Status	-.385	-.509	.283	.205	.081	.562	.255	-.010	.917
37. Q. 162 Importance of Knowledge of Intellectual Matters for High Social Status	.383	.103	-.601	-.376	.432	-.070	-.236	-.146	.929
Single Items from Teacher Questionnaire:									
38. Q. 60 Dedication of Teachers to Developing Students' Intellectual Skills	-.697	.268	-.107	-.282	-.253	.035	-.148	.202	.778
39. Q. 66 Dedication of Teachers to Importance of Homework	-.661	.385	-.203	-.058	.213	.102	-.182	.091	.728
Cumulative Proportion of Total Variance	.396	.542	.647	.729	.790	.839	.873	.900	

[a] Loadings of .483 and greater are significant at the .05 level.

TABLE B-4

KUDER-RICHARDSON FORMULA 20 RELIABILITY COEFFICIENTS[a] FOR ABSTRACT REASONING AND MATHEMATICS TESTS ADMINISTERED IN TWENTY HIGH SCHOOLS, BY GRADE AND SEX, AND KUDER-RICHARDSON FORMULA 21 RELIABILITY COEFFICIENTS[b] FOR PROJECT TALENT SAMPLE OF HIGH SCHOOL STUDENTS

A.R. Test (No. of items = 15)

School Number	Boys[c] Gr. 9	Gr. 10	Gr. 11	Gr. 12	Girls[c] Gr. 9	Gr. 10	Gr. 11	Gr. 12
01	*	.662 (85)	.674 (81)	.698 (51)	*	.418 (81)	.571 (78)	.711 (56)
02	*	.569 (156)	.672 (134)	.534 (135)	*	.659 (151)	.649 (137)	.610 (130)
03	*	.654 (172)	.671 (155)	.739 (137)	*	.597 (140)	.663 (162)	.687 (123)
04	*	.582 (166)	.396 (159)	.408 (155)	*	.535 (174)	.536 (153)	.606 (137)
05	*	.55 (291)	.587 (267)	.590 (182)	*	.609 (281)	.639 (214)	.652 (193)
06	*	.653 (327)	.696 (371)	.679 (361)	*	.665 (335)	.638 (344)	.658 (303)
07	.685 (146)	.614 (150)	.661 (121)	.596 (93)	.643 (146)	.671 (143)	.710 (138)	.685 (121)
08	*	.546 (378)	.629 (395)	.583 (284)	*	.557 (405)	.580 (374)	.607 (288)
09	*	.570 (77)	.442 (58)	.570 (83)	*	.653 (67)	.527 (73)	.632 (76)
10	.747 (73)	.674 (72)	.450 (59)	.593 (61)	.623 (83)	.561 (59)	.615 (82)	.617 (47)
11	*	.614 (354)	.562 (317)	.603 (264)	*	.578 (315)	.575 (307)	.569 (280)
12	.655 (46)	.748 (34)	.674 (125)	.583 (94)	.547 (38)	.706 (41)	.615 (89)	.621 (91)
13	.726 (135)	.691 (117)	.566 (149)	.748 (100)	.627 (145)	.716 (125)	.568 (120)	.699 (90)
14	*	.534 (115)	.655 (104)	.482 (92)	*	.535 (99)	.648 (106)	.564 (98)
15	*	.652 (196)	.539 (231)	.607 (169)	*	.602 (226)	.676 (245)	.581 (168)
16	.544 (143)	.645 (130)	.525 (114)	.486 (84)	.673 (104)	.686 (134)	.544 (138)	.685 (87)
17	*	.730 (365)	.734 (410)	.649 (347)	*	.673 (370)	.639 (307)	.686 (345)
18	.552 (148)	.663 (156)	.579 (177)	*	.551 (112)	.503 (99)	.533 (99)	*
19	.709 (95)	.669 (139)	*	*	.605 (77)	.623 (122)	*	*
20	.683 (124)	.580 (85)	.651 (97)	.674 (102)	.736 (117)	.613 (96)	.542 (114)	.594 (95)
All Twenty Schools Combined	.694 (910)	.643 (3,565)	.637 (3,524)	.634 (2,794)	.688 (822)	.639 (3,463)	.634 (3,280)	.653 (2,738)
Project Talent Sample[d]	.671 (3,921)	.648 (3,876)	.659 (3,483)	.655 (2,946)	.661 (4,012)	.655 (3,914)	.639 (3,658)	.638 (3,302)

TABLE B-4 (continued)

MATH Test (No. of items = 24)								
	Boys^c				Girls^c			
School Number	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Gr. 9	Gr. 10	Gr. 11	Gr. 12
01	*	.831 (85)	.883 (81)	.888 (51)	*	.807 (81)	.859 (78)	.888 (56)
02	*	.890 (156)	.891 (134)	.892 (135)	*	.883 (151)	.884 (127)	.862 (130)
03	*	.804 (172)	.867 (155)	.880 (137)	*	.786 (140)	.835 (162)	.872 (123)
04	*	.803 (166)	.873 (159)	.854 (155)	*	.814 (174)	.854 (153)	.866 (137)
05	*	.863 (291)	.875 (267)	.885 (182)	*	.853 (281)	.871 (214)	.874 (193)
06	*	.849 (327)	.899 (371)	.893 (361)	*	.821 (335)	.868 (344)	.846 (303)
07	.655 (146)	.652 (150)	.845 (121)	.874 (93)	.616 (146)	.615 (143)	.824 (138)	.723 (121)
08	*	.852 (378)	.888 (395)	.898 (284)	*	.843 (405)	.881 (374)	.839 (288)
09	*	.772 (77)	.881 (58)	.882 (83)	*	.601 (67)	.881 (73)	.829 (76)
10	.815 (73)	.825 (72)	.357 (59)	.895 (61)	.808 (83)	.871 (59)	.857 (82)	.901 (47)
11	*	.839 (354)	.856 (317)	.882 (264)	*	.783 (315)	.825 (307)	.844 (280)
12	.557 (46)	.713 (34)	.840 (125)	.844 (94)	.550 (38)	.798 (41)	.849 (89)	.857 (91)
13	.759 (135)	.727 (117)	.844 (149)	.864 (100)	.633 (145)	.746 (125)	.808 (120)	.822 (90)
14	*	.836 (115)	.911 (104)	.868 (92)	*	.879 (99)	.891 (106)	.880 (98)
15	*	.873 (196)	.901 (231)	.899 (169)	*	.849 (226)	.893 (245)	.857 (168)
16	.752 (143)	.761 (130)	.776 (114)	.843 (84)	.727 (104)	.773 (134)	.781 (138)	.790 (87)
17	*	.859 (365)	.903 (410)	.889 (347)	*	.848 (370)	.884 (307)	.858 (345)
18	.831 (148)	.869 (156)	.841 (177)	*	.784 (112)	.789 (99)	.815 (99)	*
19	.794 (95)	.779 (139)	*	*	.661 (77)	.749 (122)	*	*
20	.862 (124)	.816 (85)	.864 (97)	.895 (102)	.841 (117)	.829 (96)	.847 (114)	.867 (95)
All Twenty Schools Combined	.807 (910)	.846 (3,565)	.883 (3,524)	.890 (2,794)	.773 (822)	.839 (3,463)	.870 (3,280)	.866 (2,728)
Project Talent Sample^d	.704 (3,921)	.741 (3,876)	.826 (3,483)	.846 (2,946)	.642 (4,012)	.698 (3,914)	.781 (3,658)	.783 (3,302)

TABLE B-4 (continued)

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[a] The following formula was used for computing the KR-20 reliability coefficients:

$$r_{tt} = \left(\frac{n}{n-1}\right)\left(\frac{\sigma_t^2 - \Sigma pq}{\sigma_t^2}\right)$$

where n = no. of items in the test
p = proportion of students passing an item
q = 1-p
σ_t^2 = total test variance

Source: Guilford (1956, p. 454).

[b] Source: Flanagan, et al., (1964, Tables 2-1). For a presentation of the KR-21 Formula used in Project Talent, see Guilford (1956, p. 455).

[c] Figures in parentheses represent the number of students of each sex on which the reliability coefficient is based.

[d] The figures in parentheses for these Project Talent data represent a 10 per cent sub-sample of all students in Project Talent. Stated differently, it is an "across-the-board" 10 per cent sub-sample of the students from all grades in all of the schools participating in their study, rather than all the students in 10 per cent of their schools (Flanagan, et al., 1964, p. 2-2).

[*] There are no students in these grades for the specified schools.

TABLE B-5

MEANS AND STANDARD DEVIATIONS BY GRADE FOR BOYS ON ABSTRACT REASONING TEST (AR) AND MATHEMATICS TEST (MATH) IN EACH SCHOOL, ALL TWENTY SCHOOLS COMBINED, AND A REPRESENTATIVE SAMPLE OF U.S. HIGH SCHOOL STUDENTS PARTICIPATING IN PROJECT TALENT IN SPRING OF 1960

		Mean				Standard Deviation			
	School Number	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Gr. 9	Gr. 10	Gr. 11	Gr. 12
AR	01	*	10.2	10.7	11.1	*	2.7	2.6	2.7
MATH		*	13.2	15.1	16.8	*	4.9	5.6	5.5
AR	02	*	9.6	10.5	10.5	*	2.5	2.7	2.2
MATH		*	13.5	16.5	16.8	*	5.9	5.6	5.5
AR	03	*	9.4	9.9	9.9	*	2.8	2.7	3.1
MATH		*	12.4	14.4	15.2	*	4.6	5.4	5.6
AR	04	*	9.9	10.6	10.9	*	2.4	2.0	2.0
MATH		*	14.4	17.0	17.3	*	4.5	5.2	4.8
AR	05	*	10.0	10.5	10.7	*	2.4	2.4	2.4
MATH		*	13.7	16.0	16.5	*	5.3	5.3	5.5
AR	06	*	9.4	10.0	10.4	*	2.7	2.8	2.7
MATH		*	12.3	14.0	15.2	*	5.2	6.0	5.9
AR	07	8.0	8.5	9.0	9.7	3.0	2.7	2.8	2.6
MATH		9.3	10.2	12.9	12.1	3.5	3.3	5.1	5.4
AR	08	*	9.8	10.5	10.8	*	2.4	2.5	2.3
MATH		*	13.2	14.4	15.5	*	5.2	5.8	5.9
AR	09	*	9.7	9.9	10.7	*	2.4	2.1	2.3
MATH		*	11.6	13.5	14.2	*	4.2	5.6	5.5
AR	10	9.3	9.1	10.3	10.2	3.2	2.9	2.1	2.4
MATH		12.7	12.8	16.1	16.4	4.7	4.9	5.0	5.7
AR	11	*	10.3	10.8	11.3	*	2.5	2.3	2.3
MATH		*	14.9	16.8	17.4	*	4.9	5.0	5.3
AR	12	9.5	9.5	10.2	10.3	2.7	3.1	2.7	2.4
MATH		10.3	12.6	14.1	14.1	2.9	3.8	5.0	5.0
AR	13	8.6	8.9	10.0	9.4	3.1	3.0	2.4	3.2
MATH		9.5	10.3	13.8	13.4	4.0	3.9	5.0	5.4
AR	14	*	9.9	10.7	11.0	*	2.4	2.5	2.1
MATH		*	14.6	16.5	17.9	*	4.8	6.1	4.9
AR	15	*	9.3	10.1	10.2	*	2.8	2.3	2.5
MATH		*	12.8	14.8	14.2	*	5.6	6.0	6.0
AR	16	9.6	9.3	10.3	10.6	2.4	2.7	2.3	2.1
MATH		11.4	13.0	14.4	16.0	4.0	4.1	4.2	4.8
AR	17	*	10.2	10.7	11.2	*	2.8	2.7	2.4
MATH		*	13.4	16.1	16.6	*	5.3	5.9	5.5
AR	18	10.4	10.9	11.1	*	2.3	2.5	2.3	*
MATH		13.0	14.8	15.3	*	4.8	5.3	4.9	*
AR	19	8.2	8.8	*	*	3.2	2.9	*	*
MATH		10.4	10.9	*	*	4.5	4.3	*	*
AR	20	9.0	9.9	10.1	10.3	3.0	2.5	2.7	2.7
MATH		12.6	14.5	17.3	16.0	5.4	4.7	4.9	5.7

TABLE B-5 (continued)

	School Number	Mean				Standard Deviation			
		Gr. 9	Gr. 10	Gr. 11	Gr. 12	Gr. 9	Gr. 10	Gr. 11	Gr. 12
AR MATH	All Twenty Schools Combined	9.1 11.2	9.7 13.1	10.4 15.2	10.6 15.8	3.0 4.6	2.7 5.1	2.6 5.6	2.5 5.7
AR MATH	Project Talent[a]	8.1 9.2	8.6 10.0	9.2 11.6	9.6 12.4	3.2 4.2	3.0 4.5	3.0 5.4	3.0 5.6

[a] Data are based on a representative sub-sample of all U.S. high school students participating in Project Talent (Flanagan, et al., 1964, Tables 3-1 and 3-2.

*There are no students in these grades for the specified schools.

TABLE B-6

MEANS AND STANDARD DEVIATIONS BY GRADE FOR GIRLS ON ABSTRACT REASONING TEST (AR) AND MATHEMATICS TEST (MATH) IN EACH SCHOOL, ALL TWENTY SCHOOLS COMBINED, AND A REPRESENTATIVE SAMPLE OF U.S. HIGH SCHOOL STUDENTS PARTICIPATING IN PROJECT TALENT IN SPRING OF 1960

		Mean				Standard Deviation			
	School Number	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Gr. 9	Gr. 10	Gr. 11	Gr. 12
AR	01	*	10.6	10.2	10.6	*	2.0	2.4	2.8
MATH		*	13.7	13.7	14.0	*	4.5	5.3	5.7
AR	02	*	10.0	10.3	10.1	*	2.6	2.6	2.5
MATH		*	13.8	15.4	14.1	*	5.6	5.6	5.3
AR	03	*	9.2	9.6	9.7	*	2.6	2.7	2.8
MATH		*	11.3	12.6	12.6	*	4.4	4.9	5.5
AR	04	*	9.5	10.3	10.6	*	2.3	2.3	2.4
MATH		*	13.2	15.7	15.8	*	4.6	5.0	5.1
AR	05	*	9.9	10.2	10.0	*	2.6	2.6	2.6
MATH		*	13.8	13.7	13.8	*	5.1	5.4	5.5
AR	06	*	9.2	9.8	9.6	*	2.8	2.7	2.8
MATH		*	10.8	13.0	12.1	*	4.7	5.5	5.1
AR	07	7.3	8.2	8.2	8.6	2.9	2.9	3.1	2.9
MATH		8.8	8.4	10.0	9.5	3.2	3.2	4.7	3.7
AR	08	*	9.8	10.2	10.6	*	2.4	2.4	2.4
MATH		*	13.2	12.9	13.1	*	5.0	5.6	5.0
AR	09	*	9.3	10.1	9.8	*	2.7	2.3	2.6
MATH		*	10 9	12.6	11.3	*	3.3	5.6	4.7
AR	10	9.5	9.9	9.9	10.7	2.6	2.4	2.5	2.5
MATH		13.0	13.8	14.0	14.8	4.5	5.4	5.2	5.9
AR	11	*	10.1	10.6	10.8	*	2.4	2.4	2.3
MATH		*	14.0	14.7	14.7	*	4.4	4.8	5.0
AR	12	9.8	8.9	9.8	10.0	2.4	2.9	2.6	2.6
MATH		10.6	10.7	12.1	12.4	2.9	4.5	5.2	5.2
AR	13	8.4	8.7	9.7	9.1	2.8	3.1	2.4	2.9
MATH		9.6	10.0	10.5	10.7	3.3	4.0	4.5	4.6
AR	14	*	9.6	10.1	10.6	*	2.4	2.6	2.3
MATH		*	15.0	14.4	17.4	*	5.4	5.7	5.3
AR	15	*	8.9	9.4	10.3	*	2.6	2.8	2.4
MATH		*	11.8	12.0	12.2	*	5.1	5.9	5.2
AR	16	8.4	8.8	9.6	9.8	2.9	2.9	2.4	2.8
MATH		11.3	12.1	13.1	12.8	3.7	4.1	4.3	4.4
AR	17	*	10.1	11.0	10.7	*	2.6	2.4	2.6
MATH		*	12.9	14.2	14.5	*	5.1	5.7	5.2
AR	18	10.3	11.0	10.8	*	2.3	2.1	2.2	*
MATH		12.4	14.5	14.7	*	4.4	4.4	4.6	*
AR	19	8.4	8.4	*	*	2.7	2.7	*	*
MATH		10.0	10.3	*	*	3.5	4.0	*	*
AR	20	9.2	10.1	9.9	10.4	3.1	2.6	2.4	2.4
MATH		13.0	15.4	15.8	17.0	5.0	4.8	4.8	5.0

TABLE B-6 (continued)

		Mean				Standard Deviation			
	School Number	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Gr. 9	Gr. 10	Gr. 11	Gr. 12
AR	All Twenty Schools Combined	8.7	9.6	10.0	10.2	3.0	2.7	2.6	2.6
MATH		10.9	12.5	13.4	13.5	4.2	5.0	5.5	5.4
AR	Project Talent[a]	8.1	8.5	8.9	9.2	3.1	3.1	3.0	3.0
MATH		9.3	9.7	10.1	10.3	3.9	4.2	4.8	4.9

[a] Data are based on a representative sub-sample of all U.S. high school students participating in Project Talent (Flanagan, *et al.*, 1964, Tables 3-1 and 3-2.)

*There are no students in these grades for the specified schools.

TABLE B-7

QUARTILE RANKINGS FOR SCHOOLS ON THE SIX FACTOR SCORES

School Identification Number		School Quartile Ranks for Factors					
	Factors:	I	II	III	IV	V	VI
01		1	1	3	1	4	4
02		2	1	2	1	3	3
03		4	4	1	4	1	1
04		1	2	4	4	4	4
05		2	1	1	2	2	3
06		3	3	3	2	3	4
07		4	4	1	4	1	2
08		4	3	2	3	2	1
09		3	4	1	4	1	1
10		1	1	4	1	4	4
11		1	2	4	1	4	3
12		4	4	2	5	2	1
13		4	4	1	4	1	2
14		2	4	3	3	1	1
15		3	2	3	2	3	2
16		3	3	1	2	1	1
17		2	2	3	3	3	2
18		1	1	4	1	4	4
19		4	2	2	3	1	3
20		1	1	4	1	4	4